

THE JOURNAL OF GENERAL EDUCATION

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VOLUME I

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JOURNAL OF GENERAL EDUCATION

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The Journal of General Education

Vol. I

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Editorial Notes

It is gratifying to note that the first issue of the Journal has had a good reception from every quarter. It is hoped that the goodwill of which this is an indication will develop into a permanent interest, and that more and more people interested in education will come to take a proprietary interest in the Journal, so that they may not only buy and read it, but also write for it. It is only when such a body of interested persons is created that a journal can prosper and fulfil the purpose for which it is intended.

One of our objects is to publish in each issue an account of the experience of introducing General Education at a University or a College, the difficulties that were encountered and how they were overcome, the modifications in the original scheme that became necessary, and so on. We started with Dr. K. S. Yajnik's article on General Education at Baroda. In this issue we have an article embodying the experience of introducing General Education at an affiliating university, Osmania at Hyderabad. Each has had its own special problems, and the contrasts presented are most instructive.

A feature which we have introduced in this issue is "Excerpts from Reports." We have started with the Report of the Radhakrishnan Commission which, for the first time in this country, advocated the introduction of General Education in under-graduate classes. We have been moved to do so because reports, however important, tend to get out of print very quickly and become quite inaccessible. The Radhakrishnan Commission's Report has already become a very scarce document, and although the U.G.C. Committee's report on General Education carries a summary of what it says on General Education in an appendix, we consider this, the first pronouncement in India on General Education, to be important

enough to justify quotation in extenso. It is noteworthy that the Commission's Report was published 5 years before the Harvard Commitee's Report, and it is interesting to note how faithfully it expresses the ideas of the time (1949) in its utterances on the subject. General Education is offered as a countervailing force against the evils of excessive specialization, it is something to be added to the curriculum to balance and unify it. The Commission recommends the pursuit of a number of courses in the Physical and Biological Sciences, the Humanities including Philosophy, and the Social Sciences. These are to be short courses of about three months' duration each. What is very striking is the Commission's bold stand on the question of specialization. It admits the need to learn one's trade as early as one can: this can begin even at school, and be continued all the way in the University. But side by side with this must go General Education—all the way through college.

We plan to follow this with the reports of the Study Teams that went to the U.S.A. in 1956-1957 and 1958, and then to pass on to the great American documents on the subject.

Another report we have in this issue is that of a staff seminar of the Wilson College, Bombay, on specealization and General Education. This practice of holding a week-end staff seminar on some educational problem once a year or so is a thing which other colleges could take up with advantage. The Wilson College has held several; this is the second on General Education.

General Education is usually discussed in the context of the faculties of Arts and Science, and it is usually regarded as an attempt to produce as happy a blend of these two disciplines as human ingenuity can manage. In this context Professor Chavarria-Aguilar's article outlining the

General Education programme for the newest Indian Institute of Technology, at Kanpur, is particularly noteworthy. A good deal of opposition to General Education stems from the belief that it is an additional burden which we in this poor country cannot afford. Well, here is an institute of higher studies in Engineering that is planning to introduce a carefully articulated course in the Humanities. In this it is following in the footsteps of one of the great engineering institutes of the world, viz. The Massachusetts Institute of Technology. Perhaps no better testimony to the utility of a well-rounded educational programme could be furnished than the fact that the best American engineering institutes have gone in for elaborate programmes in the Humanities because they feel that such programmes will make their students better engineers and better members of society. It is worth noting that during the last World War when the Humanities dwindled into insignificance at the British Universities, the military authorities said that the training of the Air Force Cadets improved considerably when a minimum Humanities programme was added to the strictly technical training programme.

Engineering Colleges in this country have not experimented much in this direction. Many of them have a practical communications course in English; some have, in addition, a course in Economics; one or two also have a course in scientific method. But these have been added as necessary ancillaries to Engineering courses. Of the existing institutions only the Indian Institute of Technology at Kharagpur has a good General Education programme. In the First Year the students have one lecture and two tutorials per week in English Composition throughout the year. They also do a course on the Principles of Government once a week throughout the year. In the second year they do a course in History and Economics three times a week throughout the year. In the third and fourth years they choose an elective out of four alternatives (Industrial Psychology, Current Affairs, Philosophy, Art in

Industry, and Industrial and Labour Relations), and attend one class a week in it. This pattern is evidently derived from the M.I.T., where also the students in the first two years do a required course in the Humanities, and in the third and fourth years choose one out of nine electives. We understand that the Birla Engineering College at Pilani which is being remodelled on the lines of the M.I.T. is to have a similar Humanities programme. It is to be hoped that the other Engineering Colleges will follow suit.

Engineering Colleges generally enrol students from different parts of the country. This is particularly true of all the Indian Institutes of Technology. It would be a good thing if in any such institution where students from different parts of the country are assembled, the General Education Programme were so oriented that it would advance the process of emotional integration by promoting the right attitudes to India's history, and a proper understanding of the present socio-economic and psychological problems. Actually, every institution of an all-India character should carry such a programme. The Sampurnanand Committee seems to have missed this point, though its report does have a paragraph in which the importance of General Education as a balancing factor for students of Science is stressed.

We are very glad to be able to include in this issue an important document, the address of Dr. D. S. Kothari, Chairman of the U.G.C., delivered last year at the Conference of Vice-Chancellors in New Delhi. This is not only an authoritative statement of the U.G.C. view of the main problems that beset higher education in India ; it contains some telling statistics on aspects of higher education in India and the U.K. The extracts from the radio broadcast of Prof. G. D. Parikh, Rector of the University of Bombay, are very relevant to the situation in which we find ourselves as a result of the Chinese invasion.

Professor Nissim Ezekiel's article is evidence of the fact that you cannot discuss General Education in isolation ;

once you start thinking about General Education you are led inevitably to discuss all other aspects of education. General Education is thus very truly an ally of good education.

We have received the January number of the Journal of General Education published by the Pennsylvania State University. Our counterpart in the U.S.A., which is fourteen years old, has a new Managing Editor : Dr. Ben Euwema, Dean of the College of the Liberal Arts has succeeded Dr. Howard A. Cutler. In his brief editorial comments Dr. Ben Euwema has something to say about recent developments in the field of General Education in America. The most obvious of these, according to him, are : (1) the actual identification of general and liberal education ; (2) the continuing interest in curricular reforms ; (3) the new excitement about continuing liberal or general education, that is adult education, and (4) the growing concern about matters of college and university organization. General education, which began in the attempt to counterbalance specialization of the liberal arts curricula, and as a protest against the absence of liberal courses in the technical curricula, has now been almost universally accepted in the U.S. as the basic ingredient in all higher education. Interdepartmental courses have become common.

Interest in curricular reform, Dr. Euwema continues, is as keen as ever ; many new combinations of subject matter are being tried, "many marriages of elder disciplines though to be forever distinct." The most important point to note is the greater emphasis on rigour and high quality : "the newer courses and the most recent revisions of older courses substitute solid investigation of original sources for the more usual reliance on secondary and tertiary sources, demand weightier written assignments and more rigorous laboratory techniques." This is a point that all who are

interested in General Education in this country should take note of. Another significant development is the improvement in the quality of extension and adult education courses, often to the post-graduate level. One of our biggest problems is falling standards and the dilution of quality. It is heartening to note that strenuous efforts are being made in America to improve quality. It should encourage us to do likewise.

The Humanities in Technical Education*

DR. O. L. CHAVARRIA-AGUILAR

The following assumes that the humanities have a place in technical education, and that their central function therein is the development of the broadly trained professional ; their main objective the education of engineers and scientists able to assume responsibility and even leadership in the non-professional pursuits of society—in those pursuits in which a healthy society demands of all its citizens intelligent participation and commitment. To that end the humanistic curriculum in a technical institution must seek to open windows in the narrow house of specialty in order to let light in from other sources ; it must seek to bring the individual student to an understanding of the world beyond his professional interests ; it must seek to keep him informed about and alert to his environment, and to his role in it, while providing him with the basic intellectual tools for coping with it. And, perhaps most important, it must seek at the same time to create incentives, to implant in the student the willingness, in fact the eagerness, to assume intelligently and effectively the various and increasingly complex roles of modern social man.

*The term 'humanities' is used here in the broadest possible sense to include what are commonly called the Social Sciences. This is not sectarian prejudice, but convenience : the term 'socio-humanistic', 'humanistic-social studies' and the like are cumbersome and not entirely satisfactory. Therefore we shall use the terms 'humanities' and 'humanistic' alone, but we repeat that the usage is broad and must be understood to include the Social Sciences as well.

To accomplish this the student must be exposed, in sufficient breadth and depth, to the nature and function of the various humanistic disciplines and to their characteristic modes of thought. The graduate engineer and scientist must be made to see that their pursuits are but a part of an integrated larger socio-cultural complex ; they must see their pursuits in proper perspective, lest they arrive at the conclusion—erroneous and ultimately detrimental to themselves and to society—that they alone will “inherit the earth”. The student must be made aware of as broad a range as possible of human endeavours and achievements ; and there must be developed in him an appreciation of and a respect for them as vital portions of his birthright, from which not only can he not, and must not, seek to, escape, but to whose progress he will be called upon to contribute.

And the betterment of the social animal is not the sole, nor even the most important, objective of the study of the humanities. In the last analysis, technical institutions, no less than their liberal arts brethren, should seek to produce resourceful, self-reliant individuals capable when called upon to stand alone ; sensitive individuals with that inner courage, the inner resources and understanding that most clearly distinguish the broad-gauged individual, the man of vision, tolerant and sympathetic yet informed and critical, from the narrow, circumscribed intellectual cripple and social misfit.

* * * *

The first and, undoubtedly the most important, question that presents itself is whether, in a technological institution, to seek breadth in the humanities curriculum or whether to seek, rather, depth in a limited number of fields. Ideally, of course, one would like to see both breadth and depth ; to expose the students to as broad as possible a spectrum of humanistic disciplines with the option, through a system of judicious electives, to penetrate in some con-

siderable depth into one or two fields of his own choosing. But this may be difficult to achieve, given the demands of the technical side of the curriculum.

Now there is a good deal to be said for the concept of breadth in the humanistic education of an engineer or scientist (though perhaps this statement merely reflects the natural prejudices and the bone-deep conservatism of the writer). One should like to see technical institutions graduate individuals of catholic interests and competences, of broad education, sympathetic to and capable of understanding various realms of experience and knowledge ; individuals able to take an intelligent stand on a variety of subjects—good citizens as well as sound engineers or scientists. These graduates would have, one might hope, something of the polymath, of the person who understands a good deal of a wide variety of subjects and is able to form sound opinions on them, and then is able to defend his opinions intelligently. It is generally believed—empirical proof is lacking and probably impossible—that the versatile, innovative and more thoroughly integrated individual, the individual of initiative who is capable of assuming leadership and of making the most of it, is best served by an exposure in breadth (though not to the neglect of adequate depth) to a wide range of fields of knowledge, of human achievement and experience. And no nation has at any time seemed to have enjoyed an overabundance of such persons—nor does India today. To ensure to the nation an adequate and constant flow of such broadly educated individuals, able to assume intelligently a wide variety of roles, must surely be one of the chief considerations of education at all levels and of all kinds.

Yet, however, attractive the concept of the education of the polymath, it is to be questioned whether the requisite breadth and depth in curricula can be established and properly maintained within the context of a technological institution. One must, I think, accept the fact (reluctantly, if

one is a humanist) that initially at any rate a humanities curriculum in technical institutions should favour depth in a few fields rather than aim at breadth. Reasons for this will become apparent below.

We are now immediately faced with another, seemingly trivial, yet ultimately a most vital question : what percentage of the total curriculum in technical institutions is to be devoted to the study of the humanities ?

Let us stop for a moment to consider the role and function of the technological institution as an educational centre. The narrow, strictly technical school can only be justified where there is assurance that the objectives of fundamental education have been adequately met prior to the pursuit of specialized technical or scientific educational objectives. That is, where the broader educational needs of the society and of the individual have been met by the secondary school system, or where the technical school is, in essence, a post-graduate affair. I know, off-hand, of no country in which technical, nor indeed other, institutions are in such an enviable position—certainly not in India, nor yet in the United States. What we are then faced with is that technological institutions must assume to a degree the role of a university and considerably broaden their educational base ; they must accept responsibility for the broad education of their students, else they fail them and the society. Put as strongly as possible, I would venture to say that the narrow highly specialized institute of technology has no place in modern society ; technological and other special institutions can remain viable and make a definite contribution only to the extent that they lose their specialized character and tend to become, in effect, universities with a strong science or technical orientation. This tendency is already plainly met with in such U.S. institutions as the California, Carnegie and Massachusetts institutes of technology. Cal Tech is noted more for its science than for its technology ; Carnegie boasts a first rate school of fine arts

and one of the best drama programs in the country; MIT's economics department is one of the best in the United States, and the work of Chomsky, Halle and Jakobson in linguistics represents some of the best and most original work in that discipline in some decades.

In order adequately to fulfil both its general and its specialized educational functions, the institute of technology should devote at least 25% of its total curriculum to the humanities. That figure will endear me to no one: my fellow humanists will berate me for setting the figure too low, and the technologist and the scientist will scoff at a figure deemed to be absurdly high. And I might state right here and now that I have no illusions of any technological institution accepting a figure for the humanities anywhere near that 25%. Few technical institutions in India seem to get as high even as 10%, while in the United States 12% to 14% is probably average. MIT with almost 20% and Cal Tech with sometimes over that are exceptions. In my own institution, the College of Engineering humanities requirements amount to about 11% of the engineering student's total curriculum.

But even accepting for the sake of demonstration and argument 25% of the total curriculum the number of disciplines in the humanities must still be restricted to allow for some depth and scope in each individual. If coverage of a broad spectrum of disciplines is sought, the curriculum can offer no more than a sampling of elementary introductory courses with little or no opportunity afforded the student to penetrate more deeply into any one subject, should he so desire. This has inherent in it the danger of producing dilettantes rather than polymaths, and it is furthermore stultifying for the instructors for they are denied the opportunity for professional growth and development. One might argue that, given first rate instructors, the elementary course work might provide stimulation and incentives to the student individually to pursue further

work in depth, but this is a highly dubious argument, not at all borne out by experience.

Furthermore, unless provision for pursuit in depth of even a limited number of fields is made—unless, in short, the institution commits itself to seeking excellence outside the technical fields—a staff of high calibre cannot possibly be attracted. And—a truism no doubt—without first rate talent the program, even though conceived of as primarily a service function, will fail. Only the mediocre will be content to perform a strictly routine service function, to restrict himself year in and year out to the same elementary areas of his discipline; only the mediocre, in short, will be willing to accept what amounts to professional stagnation. Staff of high calibre and promise can only be recruited and retained through the incentives provided the individual by the freedom to grow, to pursue his discipline in depth, and the freedom (indeed the encouragement) actively to pursue research and thus contribute to the development of his discipline as well as to his personal growth.

One obvious corollary to the above fairly leaps out at us: that degrees, from B.A. to Ph.D. should be awarded in technical institutions in selected humanistic disciplines. If it be argued that such is not the function of the technical institute, I can only respond, considering the arguments above, that the narrow technical institute as usually conceived of an actually found has no place in modern education. I see little alternative at present to the change-over from strictly technical education to general education with a strong technical bias in technological and other special institutions, and I see no reason why the possibility should upset anyone. In fact the trend toward the humanizing of technological institutions should be applauded by all who are concerned with the broader aspects of education within the context of the needs of modern society.

And there is yet another reason for the recruitment, retention and encouragement of first rate faculty in the

humanities which affects the student directly. A humanities faculty of second-raters, clearly looked down upon by the science and technical faculties, cannot but affect the students' own attitude toward the fields of knowledge so inadequately represented. On the other hand, a group of top scholars in the humanities will not only tend to mould (favourably) the students' attitude toward the humanities, but will serve the further immensely useful function of keeping the science and technical faculties on their intellectual toes.

But we might turn now to the question of the content of a humanities program in a technological institution. If the alternative to breadth is depth and strength in a limited number of humanistic areas—and that does indeed seem to be the only reasonable alternative, short of ignoring the humanities altogether—we still face serious problems, problems perhaps more serious than if we had opted for breadth alone. They concern the choice of the fields to be included in the curriculum and the form that they are to take.

First as to form. If the disciplines of the humanities curriculum ultimately decided upon are tailored to meet the specific needs of engineers and scientists in their professional capacities, the purpose of such a curriculum is defeated completely and the student is in a very real sense done a disservice. That is, if the study of economics takes the form of "Accounting for Engineers" (some people would argue that there is no accounting for engineers), or of "Book-keeping and Business Management"; if the study of English takes the form of "Business English" or of "Scientific English"; and if the study of Sociology is exclusively preoccupied with, say, problems of industrial expansion and social dislocation, then we may produce slightly more competent engineers and scientists—to the extent that they can keep a proper set of books, write intelligible (if not necessarily intelligent) letters, and understand and sympathize with social dislocation—but we do not, by

any stretch of the term, educate them. And the disservice done to the student is damaging, for it prevents him from thoroughly understanding the humanities and their concerns, their true relation to his own specialty, and it effectively bars him from bringing his own faculties to bear on problems, of coming to an intelligent conclusion on them ; the student will be incapable of developing a point of view and of successfully defending it.

It cannot be too strongly emphasized that the disciplines ultimately chosen as the core of the humanistic curriculum must be chosen as valid and important in their own right regardless of any ultimate and direct value to the engineering and science disciplines. And their independence must be absolutely respected, otherwise the study of these disciplines will be crippled and the student cheated. This is not to say that the relevance of Economics, say, to the professional engineer or scientist is not to be exploited ; quite the contrary. But first let Economics be understood in its own right, for only thus can the student see its real relevance to his specialty and—more important—beyond. This last is important, for the humanities do have a primary relevance and a value in the larger context that transcend the narrow concerns of any single given profession ; to deny the students this vision is to subvert the aims of education and to leave them intellectually crippled.

Furthermore, it is to be expected that the fields chosen for inclusion in the humanities curriculum will be afforded the freedom and encouragement to establish themselves in such manner that they will not only serve to further the overall education purposes of the technical institution, but to contribute significantly to their own progress and development, and to the larger Indian community as well. One should hope that these disciplines would concern themselves with the problems of the nation as a whole and to contribute to their solution. If this is accepted as a working and workable proposition, then to tie the humanities too

closely to the narrow and immediate concerns of the science and technology fields is effectively to cripple them. And again, it is questionable whether staff of the desired competence could be recruited for a program circumscribed by and subservient to the scientific and technological objectives of the overall training program.

Any attempt to deal with specifics in the matter of selection of disciplines for the purposes as outlined above is far beyond the scope of this paper. A just case can be made for almost any combination of fields, always within the context of a humanities program such as this paper envisions. And every individual will have his own preferences. We can here however touch lightly upon some of the criteria for selection. The criterion of general educational value will not take us very far, though this is, of course, the most compelling. All the fields of study normally found in a liberal arts institution—all the so-called social sciences, properly speaking, the humanities and the biological and physical sciences—can lay more or less legitimate claim to educational relevance and to inclusion in a technical institution. We have to seek other criteria.

Two criteria, at least, seem to me worthy of discussion here. First, we might require that a discipline chosen for inclusion in the humanistic curriculum of a technical institution have some special relevance, within the context of present day India, in those areas of human endeavour which can be expected most commonly to impinge on the sphere of the engineer and the scientist. (Always with the caveat, previously expressed, that they be not narrowly tailored to the needs of these). Put another way, emphasis should be in those areas of the humanities in which technologists can be most profitably expected to contribute to the general well-being of the community at large.

Here we come to a necessary distinction—though not always a hard and fast one—between the humanities and

the social sciences. The latter, I think, it can be more generally agreed upon, are of more obvious immediate relevance. The social sciences concern themselves with those areas of human endeavour which seem more directly to impinge upon the individual...and *vice versa*. On the other hand, the effects, the results of the study of the humanities are less obvious in the short view; they possess little seeming urgency—more so in a nation with a rapidly developing economy and radically changing social mores. Yet we would contend (again, no doubt from natural prejudices and bone deep conservatism) that the study of the humanities is the most fundamentally significant of all studies. The humanities, dealing as they do with values, where the empirical methods familiar to the scientist seem inoperative, are usually more difficult to justify in a general scheme of technical education. Yet it is the study of the humanistic disciplines which more than any other leads to the development of the individual, gives perspective to his—to society's—efforts, and provides the necessary knowledge and tools by which the individual can most effectively evolve a point of view. And intelligent points of view, albeit differing, are demanded by a healthy society of all of its members. The burden of the foregoing, I suppose, is that technical institutions should raise their sights to the education of whole individuals, rather than lower them and be content simply with the training of scientists and engineers, no matter how sound.

The social sciences are, we reiterate, on the whole not difficult to justify as part of technical education and it should be relatively easier to make a judicious and generally acceptable selection of fields for inclusion in the humanities curriculum in a technical institution. For one thing, their relevance is more immediate and more readily demonstrable; they admit of rather more empirical "proof". The appeal of the social sciences is more direct since they concern the more apparent areas of human endeavour and achievement; the necessity of living in society and of

coping with it is obvious to all, and of greater or lesser concern to all but the fool. But again, it would be folly to believe that a given society is to be fully understood apart from its value systems—its humanistic content. Nor, of course, do value systems have any real meaning—except perhaps in some theologies—apart from their human and social context.

To digress a moment, we might touch upon an area that is, strictly speaking beyond the scope of this paper : the area of the biological sciences. There can be again no gainsaying the general value of these disciplines as education. While we have been concerned mostly with technological institutions of the engineering and science variety, those special institutions which are concerned more with agricultural education would do well naturally, to sacrifice some of the fields of study we have here discussed in favour of such biological sciences as botany, zoology, general and human ecology, and such other fields as physical geography and meteorology.

The other criterion that, in my opinion, looms as of considerable importance in the selection of a humanities curriculum, is the status of the specific discipline itself. One would tend to favour those disciplines in which there is a greater and more highly developed body of knowledge and of procedures and techniques : in short, one would be more in favour of the classical disciplines in the humanities. Such a criterion would tend to favour, say, history, literature, philosophy and philology over sociology, psychology and economics. But this is getting perilously close to choice making, which this paper is trying to avoid. Our aim here has been simply to consider some aspects of the problem of humanities in technical education and on the criteria on which curricula might be based and developed.

Finally, I can only reiterate that if the humanistic studies are to enjoy vigour and proper development their in-

dependence must be respected—they must not be considered as mere adjuncts of the technical and scientific sides of the total curriculum, else they will not be able to carry out their functions properly. And further, the work of humanities departments must be considered an integral part of the total educational objectives of the technical institution, of equal substantive importance with any other portion of the overall curriculum. Otherwise their work will be completely without any real educational value.

General Education at the Osmania University

MRS. M. S. JUSSAWALA

At the Osmania University, today, General Education has become a part and parcel of the normal under-graduate curriculum for the B.A., B.Sc. and B.Com. degree courses. Students and members of the faculty believe that General Education has come to stay ; the desirability of the course or its objectives are no longer a subject of controversy.

The entire programme had an excellent start at Osmania in view of the fact that the first study team sent from India to the U.S.A. in 1956 was led by its Vice-Chancellor, Dr. S. Bhagavantam. An extensive discussion of the rationale and nature of General Education was made available in the Bhagvantam Report released in July, 1956. Towards the close of the same year a conference of representatives from South Indian Universities was convened at Osmania to examine the detailed requirements for implementing the course at the under-graduate level vis-a-vis specialised programmes of study. The following year three members of the staff drawn from the three fields of study in General Education were sent from the University as members of the Second Indian team that visited the United States, to study the detailed working of such courses there. In the same year, a seminar was organised by the Osmania University to discuss the implementation of the course. Both Indian and American professors participated in the seminar. Since then, Dr. D. S. Reddi the present Vice-Chancellor, has visited several American Universities offering General Education courses, and on his return, the process of implementation of the programme was speeded up.

General Education at Osmania was not an isolated reform or course of study tagged on to an existing syllabus.

It was integrated with a scheme of reforms leading to the introduction of the Three Year Degree Course. In fact, the crust of custom was broken when the Osmania University pioneered a scheme of evaluation for the Three Year Degree Course under which twenty per cent of the final award is set apart for class work assignments. It thus became easier to implement General Education as a part of the entire new scheme. A syllabus was evolved to cover the three areas from which our educational content is drawn viz.

1. The Natural Sciences, in which the emphasis is not on the quantum of scientific information but on an understanding of the fundamental principles and the use of the scientific method.
2. The Social Sciences, in which the course is designed to cover the origins of contemporary society, and to analyse the special environment and its cultural impact.
3. The Humanities which include literature and philosophy. The course is framed to expose the student to great minds and to inculcate in him the abiding values of life.

Compared to Baroda and Aligarh, the Osmania University has the drawback of being an affiliating University. It is always difficult to implement simultaneously a new course in all constituent and affiliated colleges. Besides, the syllabus proposed at Osmania in 1958 was somewhat ambitious, and too elaborate to begin with. The instructional time was divided into 3 hours for English per week, 3 hours for the regional language, 6 hours for General Education, and 18 hours for Optional Subjects. This meant that each area of General Education would be allotted 35 lectures per year. In turn, this involved the preparation of exhaustive reading material and the employment of many more teachers. The programme foundered on the rocks of

finance, and became too costly in time and energy. It, therefore, came to be shelved during 1959-60, although the course formed part of the published syllabi for the B.A., B.Sc. and B.Com. degrees.

As a result of these difficulties several committees were set up to redraft the course in General Education, taking into account the foundation laid at the Pre-University level. At Osmania, a P.U.C. student specializing in the Humanities has also to take a course in General Science, and a P.U.C. student specializing in Science has to take a course in Social Studies. So, at the under-graduate level, the instructional time allocated for General Education under the revised scheme, is three hours per week for the first two years of the Three Year Degree Course. Evaluation is made through only one examination paper covering the three areas, at the close of the Second year course. The marks obtained are not taken into account in placing the candidate in a class list. The syllabus as it now stands is as follows:—

Humanities (First Year)

1. An account of the growth of languages 3 lectures
2. An account of the fine arts
 - a) The creative impulses behind all arts
 - b) The unity and variety of the fine arts
 - c) The main types of fine arts
 - d) The evolution of literary forms 11 lectures
3. What is great literature?

Illustrations from (i) Ramayana,
(ii) Oedipus Rex, (iii) War and Peace 3 lectures

Indian literature a) upto 1000 A.D.
b) 1000 A.D. to 1800 A.D.
c) The modern phase
d) The unity and continuity of Indian
literature 6 lectures

Humanities (Second Year)

- | | |
|---|------------|
| 1. What is philosophy? Its central issues ;
man, the universe, and the reality beyond | 2 lectures |
| 2. The interrelation of philosophy with other
studies accounting for the evolution of
human personality | 2 lectures |
| 3. A brief account of leading philosophies
and religious systems | 8 lectures |
| 4. The distinction between religion and
mysticism | 2 lectures |
| 5. Recent developments in religious thought | 6 lectures |
| 6. Essential unity of all religions | 4 lectures |

Social Sciences (First Year)

- | | |
|--|------------|
| 1. The meaning of civilisation and culture | 1 lecture |
| 2. Ancient Civilizations:
Greece, Rome, India and China | 7 lectures |
| 3. Cultural contribution of the Middle Ages | 2 lectures |
| 4. Transition from the medieval to the
modern age | 2 lectures |
| 5. The Industrial Revolution | 2 lectures |
| 6. Trials of Economic Liberalism | 1 lecture |
| 7. Democracy vs. Totalitarianism | 1 lecture |
| 8. Rationalist Movement in India in the
19th Century | 2 lectures |
| 9. Ideology of the Indian Constitution | 1 lecture |

Social Sciences (Second Year)

- | | |
|--|------------|
| 1. The clash of economic systems | 2 lectures |
| 2. Economic and Social problems of modern
India | 2 lectures |
| 3. An outline of the administrative set-up
of the Government of India | 2 lectures |
| 4. The meaning of freedom | 2 lectures |
| 5. The problem of peace | 2 lectures |
| 6. India in World Affairs | 2 lectures |

- | | |
|--|------------|
| 7. Reaction to materialism and the search for values | 3 lectures |
| 8. What a cultured person ought to be | 2 lectures |
| Discussion hours : 7 | |

Biological and Physical Sciences (First Year)

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|---|------------|
| 1. Origin of the earth | 1 lecture |
| 2. General shape of the earth | 1 lecture |
| 3. Concepts of work, energy and power | 1 lecture |
| 4. Early speculations on the nature of matter | 2 lectures |
| 5. Natural decay of certain elements | 2 lectures |
| 6. Reactivity of elements | 1 lecture |
| 7. Importance of carbon compounds in life | 2 lectures |
| 8. Cell and modes of cell division | 1 lecture |
| 9. Dietetic requirements of human beings | 2 lectures |
| 10. Different types of reproduction | 3 lectures |

Biological and Physical Sciences (Second Year)

- | | |
|---|------------|
| 1. Contributions of China, Egypt, Greece and ancient India to Science | 1 lecture |
| 2. Francis Bacon : the value of the experimental method | 1 lecture |
| 3. Harvey's discovery of the circulation of the blood | 1 lecture |
| 4. Development of Scientific instruments in the 17th Century and their influence on society | 2 lectures |
| 5. Newton | 2 lectures |
| 6. Discoveries of Pasteur and Koch | 2 lectures |
| 7. Some important Scientific discoveries of the 19th Century | 3 lectures |
| 8. Modern Scientific developments and their impact on life | 5 lectures |
| 9. Improvements in hygiene, medicine, surgery | 1 lecture |

In September 1959, nine months preceding the implementation of the course, a General Education Workshop was organised for over a hundred teachers drawn from different faculties of the University. This Workshop was sponsored and financed by the Ford Foundation, and encouraged useful deliberations on the philosophy of General Education, instructional practices and evaluation methods. At this Workshop it was decided to prepare synopses of lectures for the guidance of teachers. Since, at Osmania, the General Education course was to be taught at 22 different colleges located both in the city of Hyderabad and in the Telangana district, it became necessary first to orient the teachers in the objectives of the course. These very teachers met again in March 1960 to discuss and modify the synopses of lectures as they deemed necessary.

From June 1960 the course came up against the practical difficulties of implementation. To begin with, library facilities were wholly inadequate, particularly in colleges located in the districts. Apart from the students, the teachers themselves found it difficult to acquire the requisite reading material. Furthermore, it was soon found that teachers of the three areas of General Education required far greater preparation per hour of lecturing than would be necessary if they taught their own specialised subjects. It was also discovered in the process of teaching that the number of lectures prescribed per topic in the syllabus lent rigidity to the course, and it became well-nigh impossible to do justice to the syllabus in the limited time allotted for the purpose.

To overcome these practical difficulties, the University assisted the affiliated colleges in the expansion of their libraries for General Education, though only to a limited extent, on account of the paucity of funds. A committee was set up to prepare reading material in the form of mimeographed notes for the use of the students. The in-

tention was to provide a basis for further reading and to eliminate confusion. Teachers were given a rebate on work-load in the ratio of 1:2. A few topics from the syllabus were declared omitted, so that more instructional time could be devoted to the remaining topics. Two years of examination evaluation in General Education seems to indicate that the course has been fairly successful and student response quite satisfactory.

Nevertheless, in all fairness, it must be pointed out that several flaws still remain to be rectified. What General Education aims at is the integration of the various branches of knowledge in the mind of the student. By no stretch of imagination has this been so far achieved, with, perhaps, a few exceptions. Such integration under the present method of lecturing is left very much to chance. Although discussion time is provided for in the syllabus, it is not availed of, chiefly because the instructional time is inadequate and partly because both students and teachers fight shy of the discussion method. The prescribed notes mimeographed and made available to students ultimately served to fix a maximum limit to the reading material instead of serving as the nucleus for further exploration. The reason, I submit, is that our students have not cultivated the library habit and the desire for extensive reading is sadly lacking. It thus becomes obvious that the 'recall type of examination cannot be fully relied on, while its psychological hazards tend to defeat the very purpose of General Education.

Effective teaching is the key to the success of this programme. This becomes difficult when we enrol increasingly large numbers, and stress the mass approach. Thereby we lay ourselves open to the criticism that General Education only serves to make the mass approach more pedagogic. To render the lecture method more successful than it is, at present, it is imperative for teachers handling the courses to meet frequently in order to exchange experiences and

compare notes. Teachers participating in this programme must be given substantial incentives, including financial assistance, to equip themselves with books and material for their areas of teaching. As things stand, teachers in the Physical and Biological science courses of General Education split their portion of the syllabus into topics of specialisation ; so that different teachers meet a given group of students to put across different topics. In consequence, students pick up isolated lists of instruction items leading to confusion, particularly in the minds of those students who are not conversant with the subjects at all. It is therefore necessary that the same teachers should undertake the entire course in the Physical Sciences, failing which the student would feel lost in a maze of controversy and disconnected points of view.

To ensure a smooth and efficient working of the programme it is necessary to locate responsibility for it to a department or a committee. Such a body would serve as a fountain-head from which guidance would flow to affiliated colleges and it could synthesise reading material, re-examine and work out practical problems that crop up from time to time. It could also be authorised to encourage and give recognition to good teaching and arrange for frequent consultations among teachers. Student reaction to the course could also be assessed and made use of for modifications in the syllabus and instructional practices.

A comprehensive course in General Education must include an appreciation of the Fine Arts, music, and a development of communication skill. The ultimate goal of General Education is to push forward the frontiers of the mind. The fine arts have a liberating effect on the imagination and a chastening effect on the emotions. Due to limitations of finance, the prohibitive cost of audio-visual aids, and the large number of colleges in an affiliating University these have been, per force, deferred.

However, a major reform like General Education, with a whole new philosophy of teaching behind it cannot be absorbed over-night. Initial lapses and difficulties need not deter us from continuing with the programme so long as we get even one step closer to developing the student's power of self-motivation. The most important thing is to ensure a measure of progression and sequence in the student's mind. As our experience becomes richer we can gradually surmount practical difficulties and effect improvements both in the content of the course and its implementation.

Introducing General Education

NISSIM EZEKIEL

I propose to discuss the range of specific problems likely to rise when General Education is introduced in the present University set-up. To narrow down that subject still further, I shall refer only to the University of Bombay. It is not necessary for my purpose to make yet another statement of the case for General Education. Certainly there is a case, and a very strong one, though it is a mistake to assume that it remains strong in every context. It is also a mistake to assume that the present system of higher education does not, at least in theory, hold the same ideals as are attributed to the newer concept. The conditions that made it difficult to practise those ideals will still be there when General Education is introduced. I am not worried about the *normal* difficulties of making it work. The conditions I am writing about are *not* normal and in this article I intend to describe them at some length.

No educational reform, however minor, can succeed in India unless the conditions underlying the system prevalent at present are normalised. It is fashionable to condemn the system without analysing the conditions in which it operates. I submit that if these conditions remain the same, General Education will soon become like any other system of higher education in this country.

This is not to argue against the proposed scheme, nor to defend the one it will replace. Perhaps nothing will be lost by introducing General Education. Something may be gained. But this prospect, if it is realistically defined, cannot generate the enthusiasm needed to make the idea successful. On the contrary, it may create cynicism and apathy. *Plus ça change, plus c'est la même chose* is not

a belief that helps to enlist supporters for improving anything. It may come to be believed that General Education means teaching World History under the title Western and Eastern Civilizations. The Discussion Method may be assimilated by harrassed teachers to the tutorial system now in vogue, which consists essentially of lecturing to small classes. Provision of suitable reading material? Yes, notes, guides and potted information, glorified. Written work by students? Essay writing and composition exercises slightly enlarged in scope. Developing the students's personality and his capacity to think for himself? Well, has not that always been the aim of higher education? To demonstrate to the student the fundamental unity of all knowledge and to show him the relationship between its various departments? True, but specialisation by itself has not been the enemy of this aim as much as a kind of illiteracy of scholarship among not only students but also their teachers.

This is one of the conditions I am going to describe, which General Education cannot be expected to liquidate. Nor has it any answer to the problem of examination methods, and the high percentage of failures at all University examinations in India. These were prior to and will antedate the introduction of General Education. The problems of teachers will probably become more acute as no one, so far as I know, has seriously suggested that their work load be reduced or their salaries raised in the interests of the profession and of the students. General Education cannot be expected to make any significant contribution to the problem of attracting talent to and retaining it in the teaching profession, though its success is predicated by many of its sponsors precisely on that possibility.

Let me add that in several colleges of the Bombay University, undesirable educational practices, such as the dictation of notes instead of teaching, and even the dictation of model answers to set questions, are accepted, encour-

aged and insisted upon by the powers that be. They will unquestionably persist in their ways when General Education is introduced. There was a time when the University and its teachers (with some exceptions) deplored the narrow "examination point of view" of the students and urged them to develop a healthier attitude to the acquisition of knowledge. Today that same narrow examination point of view has been officially adopted by several college authorities, and the monthly formal examination dominates the lives of the students in place of the old terminals. What was even at its worst an evil tendency, has obtained the sanction of authority. Is it proposed to allow these things to go after General Education replaces the present system? If yes, there is no hope at all that it will make the slightest difference to the unacademic atmosphere of our colleges, not only in classes and corridors but also in staff rooms.

All talk of maintaining standards at the University is beside the point as long as a minimum pass at the school leaving stage is accepted as guaranteeing entrance to a course supposed to be of advanced learning. First of all there is the formidable language problem in relation to which the University must take up a clearer and stronger position. If it wishes to keep English as the sole medium of instruction, it must insist on competence in that language as a requirement of admission. Similarly, it must remove all the existing anomalies which enable students unqualified by their choice of subjects at the school leaving stage to pursue further studies in the University, to do so without a qualifying test at some stage. They never make up, and fail in large numbers. It is an open secret that hundreds from among those who pass have been graced in order to avoid a still further fall in the already low level of passes in several University examinations.

To mention only one example of many that may be cited, students who have studied only elementary mathematics in school are permitted to join the First Year Science

class in College, with a level of mathematics compulsory which is considerably higher *at the start* than at the end of the final school year. A higher level mathematics is optional in schools, most of which don't offer it to their students because it is tougher and brings down the percentage of passes. Is this fair to the students, who are later freely admitted to the University Science course at least in some colleges, without realising what fate almost inevitably awaits them? The remedy in college so far adopted is to smilingly exhort the students to work hard, at the time of being admitted, sometimes to arrange additional mathematics classes for them or to recommend their joining "tuition classes" outside the college. The more obvious but also more radical solution of insisting on higher mathematics at school for prospective science students is shirked.

With students from English medium and non-English medium schools herded together in the same class, the college teacher faces a task he cannot cope with satisfactorily. He can either address himself to the students who know English well or to those who don't, in either case being too elementary or too advanced in both language and ideas for one or the other group. Since he is bound to consider the interest of the majority, which is from non-English medium schools in most colleges, he offers little by way of intellectual stimulus to the minority. In this connection, it is depressing to note that there has been during the last several years a steady deterioration in the standard of knowledge displayed in examinations by that minority. Students belonging to it write fluent English, and so pass easily or obtain second class marks, but rarely show signs of interest, enthusiasm and hard work. Deprived of any challenges,—the texts being often too easy for them, and the instruction too elementary—they decline into apathy and sometimes actual hostility towards all forms of learning and scholarship. Reading an essay written in flawless English by a First Year Arts student, I was startled to come across the

following aggressive sentiment: "To be frank," the student writes, "I hate this process of acquiring knowledge." I could hardly blame him, since acquiring knowledge means listening to four or five lectures a day for six days in the week, delivered in a species of English inferior to his own. Is there not a danger that General Education may come to mean the same thing, more or less, with some change in emphasis so far as the curriculum is concerned?

It would be well to consider whether, by attaching so much importance to class-room instruction, we are not destroying in our students the capacity to learn anything by themselves. I am convinced that this is so. We have great faith in more lectures, more tutorials, more written work, more of everything in the class-room. More work for the same number of teachers, never more teachers for the same number of students. Never an additional facility for the staff to raise their morale, encouragement of research or advanced studies purely for the sake of academic value, assistance in building up personal collections of books through grants or any other imaginative means of strengthening the spirit of the human beings through whom higher education is imparted. The panacea is always more teaching. From June 1963, for example, B.A. students will do exercises in comprehension and précis writing. Are teachers underworked at present that additional burdens should be placed on them without the prospect of any assistance in any way? Last year, from the second term, one additional lecture and one additional tutorial were prescribed for First Year Arts and Inter. Arts students. My contention is that even if we have six more lectures and then more tutorials, the net result would be the same. There is no salvation in instruction. Unless we can motivate students to learn, and make it impossible for them to avoid it in a given context, we cannot expect to break the vicious circle in which University education is trapped at present. In this vicious circle, everything becomes farcical.

The present mode of dealing with a text-book, for example, is unworthy of higher education. It consists of reading out the whole, of it in class, sentence by sentence, explaining every "difficult" word and phrase in two or three sessions per week throughout the academic year. The students do not read a single page of it by themselves in advance of the teacher. They do no supplementary reading. They make notes at lecture time, but rely even more heavily on guides, concentrating on model questions and answers. All this is well-known. Is there no way out? Must student and teacher function within the cast-iron framework of a time-table built on the principle that there must be no "gaps" between lectures in the course of the day? Is there no better method of dealing with a play or a novel at the University level than by starting to read it out to the students in the first week after college opens, with nothing more than a preliminary comment or two, and to go on reading it out with a running commentary till the end of the year?

I think an alternative, more flexible, more intelligent method would work, provided the text has been carefully edited and annotated for our students. After the teacher has delivered three or four introductory lectures on it, providing the general background and some specific guidance on supplementary reading, the students may be given two weeks to study the book on their own. The teacher ought to be available during this time for consultation. The class then reassembles to hear another three or four lectures of an analytical nature, based on the assumption that the student has read the text. A series of group seminars and discussions follows, which brings students and the teacher closer together. These need not be confined to the conventional forty-five minutes but may extend over two hours or so, with a break for tea during which the group fraternises. Some written work may be dealt with in the discussion group or even in the large class, since each ex-

ercise commented on is considered merely as an example of merit and limitations, characteristic faults, etc.

Relieved of his heavy programme of unavoidable lecturing, the teacher would have ample time to read the students' exercises and even to discuss some of them personally with individual students. Because something cannot be done with *all* students, it does not mean that it should not be done with *some* of them. At the end of the term, the teacher would deliver three or four summing-up lectures. Whatever scenes or sequences he reads out from the next would be purely for illustrative purposes. This means that the teacher is expected to deliver eight to ten lectures in all on a given text, devoting the rest of the time available to him in individual and group discussions. He could also spend time in preparing appropriate reading material for his students—regarding which there is much talk but little action. Routine unprepared or inadequately prepared lectures—the bane of University education in India—can be eliminated. The teacher can be made free, to be bound to his students in an associated study of a prescribed textbook. The present work-load of lecturing can be cut by half, but the actual work done by the teacher will remain the same or even increase since it will be meaningful, intelligent work, it will not be resented. The students will be compelled to do some work on their own. Higher education cannot be based on secondary school processes.

If some such change is made, the waste of time on pointless marking of examination papers can be avoided. It makes no sense at all to mark papers in college tests and terminals without correcting them and discussing them with students in small groups. Given the ample time released by the new programme of instruction, this is possible. Greater contact between teacher and student must be arranged for somehow and the present system of relentless lecturing does not allow it. The only way to make room for it is by reducing the heavy schedule of lectures,

heavy from the student's as much as from the teacher's point of view. That schedule is based on the belief that teaching is a one-way process, and learning consists of submitting to it. Surely, the idea of General Education is totally incompatible with "covering the course," interpreted to mean reading a prescribed text to students and explaining it sentence by sentence.

There need be no fear that the teachers will become idle if their lecturing schedule is made lighter or that the students will wander about inside and outside the college premises unless chained to their desks listening to compulsory lectures. This fear is caused by lack of confidence in the process of higher education which is essentially self education. It can never be anything else. Besides, it is not impossible to devise suitable institutional pressures to supplement the creation of interest in the subject, both being necessary to push the student gently in the right direction. There is no harm opening up before every student, quite seriously, the prospect of having to leave the institution if he fails to do the work expected of him. At least the threat should be serious, and it may not be necessary to enforce it in more than a very few cases. But I think it is inviting indiscipline to give the student an unconditional right to remain in the institution because he has paid his fees. He remains in it throughout the year whatever his record and performance. He may at the worst lose his year if his attendance falls below the prescribed level or not be sent up for the University examination if he does not get through the college "prelims," but nothing, absolutely nothing, can happen to him during the year. He may score less than ten per cent marks in college tests and examinations. He may even avoid appearing for these with one excuse or other. He may give every demonstration of his lack of interest. But there he remains. All the time he contributes only to that inert material being lectured to which constitutes by and large the phenomenon of University education in India. It has been called a factory system, but it is much worse,

since the products it turns out are not fit for the market. Can we marry General Education to this system and still make a success of it?

This brings us to the heart of the matter, which is the problem of creating conditions for the development of scholarship among teachers. Without this, it is universally admitted, General Education must fail, as the present system, to the extent that it is feeble, is so largely for the same reason. To start with, we must reconsider our treatment of the new-comer to the profession, fresh from his Master's degree. Our way with him at present is to offer him the minimum salary even if he has scored a first, and even if his career as a student indicates that he is desperately needed in the teaching line. Lip service is given to the need for a better class of teachers, but when there is a prospective applicant capable of filling the bill, nothing is done to make him feel needed. He is forced to undertake the maximum load of work (fifteen lectures and four tutorials per week) and he is allotted the classes traditionally considered the most difficult to handle, such as the Compulsory English for Science students. In addition he is expected to check essay books—upto 150 per week. After he has had a few years of this, he quits and no one cares even to regret his departure. The next victim is innocently knocking at the door.

Of those that remain in the profession, only a few retain an interest in their subject and study it further. Hardly any, even if otherwise able as teachers, succeed in keeping abreast of contemporary developments. A kind of intellectual listlessness comes over them which is easily communicated to their students. All this, too, is well-known. Yet, the main problem of teachers, which is the relentless lecturing they have to do, remains untouched by all the proposals made so far to raise their intellectual standards. Many of them eventually lose grip altogether on even the elements of the subject they profess to teach. The plight of their students may be easily imagined.

I think two measures are feasible to improve the situation. The newcomer to the teaching profession must be regarded as serving an apprenticeship rather than as a full-fledged teacher, with the salary of a full-fledged teacher. The payment made to him is in the nature of an investment which the University will never have cause to regret. If the new-comer is allowed five years of intense study, under contract to the College or University, he will grow up to be the kind of teacher everybody says is urgently needed in India. The others of the older dispensation, if their souls can be saved, should be given sabbatical leave or something of the kind, and opportunities to carry on with their interrupted studies, not only in their own interest but also for the sake of their students. I dare say all these ideas can be given a practical form, if reasonable support can be found for them. It is certain that without specific measures of a benevolent and generous kind, imaginatively applied, there will never be an improvement in the quality of our teachers.

Finally, it is my view that the introduction of General Education should be accompanied by a clean sweep of all those unholy compromises and concessions which enable students to pass examinations without a scrap of knowledge worth mentioning. Hindi is hardly worth teaching if 15 marks out of 75 are considered enough to pass. To keep English compulsory for B.A. students and at the same time not to count marks scored in it for being placed in a class is absurd. To condone failure in English by Inter. Science students and yet to insist on two lectures being delivered to them every week on a prescribed text is to make the teacher's position intolerable. To allow marks in English to be combined with those in the mother tongue for the purpose of passing is to reduce the standard of English in the University to an absurdly low level. As long as these practices prevail, it is idle to hope that General Education will change the picture.

Excerpts from Reports :

Radhakrishnan Commission's Report on University Education, Chapter IV : General Education

1. *The Functions of Courses of Study*—In the actual processes of living there are no sharp boundaries between experiences in different fields. Any experience in one field is associated with and influenced by experiences in various other fields. Thus life is one total, complex fabric. Yet in preparing for living by courses of study we find it to be convenient and economical to break up our interests into limited areas. There is danger that in time these limited areas of interest shall come to seem like little worlds of their own, each with its peculiar body of subject matter, and each being largely independent of all the others. Courses of study are essential expedients of formal education, but they should be recognized as nothing but an arbitrary though useful contrivance. Unless the vital interconnections of all phases of experience are kept in mind, the convenient devices of courses of study may become barriers which prevent our realizing the unity of knowledge and experience.

2. *Phases of Education*—So far as formal courses of study are concerned, higher education should have three main objectives. The first of these is *General Education*. We think and judge and act on the basis of our information and experience. If these are very limited, then our world will be small and our judgments faulty. It is the business of General Education to make available to the student, and to inspire him to master, wisely selected information as to facts and principles, so that he will have representative and useful data on which to base his thought, judgment and action, and will be aware of fields of interest and import-

ance. In the modern world there is such a vast accumulation of knowledge that no person is capable in all fields of selecting what is most important for him to know. In general education it is the business of the best qualified men in each field to select from the great mass of knowledge in that field the most significant principles, and suitable cases to illustrate those principles, and to present them in a way which will make them most available to the student. The teacher in general education should not in preparing such material, think of his own field alone. Keeping in mind the total ground to be covered by the student in all fields, he should reduce his teaching material to such proportions that it require no more than its fair share of the student's time.

The second objective of courses of study, *Liberal Education*, is preparation of the student for independent thinking, for critical inquiry and appraisal, and for creative and constructive thought and action. Liberal education does not call for separate institutions nor always for separate teaching programmes. The spirit of liberal inquiry should inspire all teaching. On this assumption it is not necessary to distinguish between general and liberal education. It is appropriate, however, that for mature students there shall be courses, seminar and research projects which have as a direct aim the teaching of the skills and disciplines and philosophy of free critical inquiry.

The third aim of courses of study in *Occupational Education*, that is, preparation of the student for his life work or for other specialized interests. Such courses are called vocational or technical or professional.

While these phases of education are inter-related and seldom if ever should be pursued in isolation from each other, yet we can better understand the suitability of courses of study if we consider general and professional education separately.

II *General Education*

3. *The Functions of General Education*—Higher education should not be looked upon as the acquiring of certain conventional accomplishments which mark one as a member of the educated class. It should be well-proportioned preparation for effective living in varied circumstances and relationships. The interests and opportunities and demands of life are not limited to any few subjects one may elect to study. They cover the entire range of nature and of society. That is the best liberal education which best enables one to live a full life, usually including an experience of mastery in some specialized field.

Just as a thrilling book is to an illiterate man only some paper with black marks on it, so to a person without general education the larger part of the varied and teeming interests of the world about him will be mysterious or meaningless or non-existent. The person with a narrowly specialized education is like a man who lives in a house with only one window, so that he can look out in only one direction. A general education should open windows in many directions, so that most of the varied experiences of his life, and most elements of his environment, shall have meaning and interest to him.

4. *The Value of Well-Balanced Education*— In his actual day by day life an average graduate is not primarily a zoologist or a chemist or an economist or a student of literature. His chief relationships are those of citizen, father, husband, neighbour, bread-winner, and those of an individual having many relationships with the physical world and with society. He has political, social, business and cultural interests outside his special field. Aside from the professional or other vocational training, which should be a part of every person's education, the preparation of our students should not be for a single purpose nor for any single element of living, but for varied phases of living.

The various elements of education should be pursued in vital relation to each other, so that for any person the result will be the best practical all-round development, together with effective training in his own field of work.

5. *Increasing Interest in General Education*—Scarcely any other educational movement in the Western world in recent decades is more far-reaching and significant than that away from premature or excessive specialization, and toward what is called general education. The American Council of Education, which is a council of all the chief educational associations in the United States, in reporting on its extensive five-year study of general education stated, "General education is the most discussed topic of college and university education today". Among large American universities which require a "core programme" of basic courses for every student are Columbia, Chicago, Florida, and Iowa. Other universities and colleges have set up departments of general studies in which a student may do the general part of his work for a four-year undergraduate college course. It is found that such courses serve as an admirable introduction to advanced study.

Among the suggestions for improved higher education which we have received during the course of our visits to the universities scarcely any has been more frequently or more vigorously presented than the need to escape from the extreme specialization which now prevails. From our own observations and study of the situation, we are impressed with the need for general changes in accord with these suggestions.

6. *The Content of General Education*—The ways by which a person can get a general acquaintance with his world are fairly well-known. Understanding of the physical environment is enlarged and deepened by the sciences of physics and chemistry, and by study of geography, geology, meteorology (the science of

weather) and astronomy. The world of living things is given clearer and greater meaning by the study of biology, physiology and psychology. The affairs of humanity come to be more intelligible and interesting through study of man's make-up and background (anthropology), the records of his actions (history), his social behaviour and unofficial relations (sociology), his methods of meeting his material needs (economics) and his ways of controlling and organizing human relations (politics and government). The achievements of men in thought and feeling are preserved and disclosed in literature and the fine arts. Ability to deal with things and affairs with definiteness, and to observe and think with exactness, is aided by mathematics. Finally, intelligent interest in human purpose, motive and direction may be assisted by a study of ethics, philosophy and religion. No one of these kinds of experience can be understood as an isolated subject, but each must be understood in its relation to others.

7. *The Approach to General Education*—How to help young men and women to be best equipped for interesting and effective living in all these various relationships is the problem of general education. We should not overcrowd the curriculum or give a smattering of different subjects. The aim of general education should be to select from the vast total of human knowledge elements which are most significant and representative, and to present them in such a way as to lead to an understanding of controlling principles and chief classes of phenomena, with typical illustrations and cases ; to the habit and capacity of objective critical inquiry ; to creative thinking ; to the habit of applying one's knowledge to the solving of his own problems ; to an attitude of interest and curiosity which will be expressed in awareness and continued growth ; and to current enjoyment of living.

In many cases efforts to achieve good proportion between the so-called humanities and science, and between general and vocational education, have been by means of expedients and devices, without clear thinking as to the aims being pursued. For instance, in general education there is a tendency to dismiss the field of "science" with the demand that a student take "some science subject" of his own choice, limiting his introduction to science to a single field. This may have the value of acquainting him with the scientific method and of giving him some familiarity with one limited area, but it does not serve the purpose of making him at home in the world he lives in. One may take a course in chemistry and yet be almost wholly ignorant of the biological sciences and of the physical environment as disclosed by physical geography, geology and astronomy.

As another illustration of reliance on arbitrary expedients and devices, there has been a tendency in Europe and America to devote the first half of a four year course to general education and the last half to specialization. A similar tendency is in evidence in India. This practice has some very undesirable results. From time immemorial boys and girls of fifteen years and older have craved to be at the work of their lives, or at least to be definitely preparing for it. To postpone satisfaction of that craving often results in a feeling of frustration and loss of interest, and very often in a half conscious rebellion against an educational process which seems to them to lack vitality. Vocational preparation should begin as early in life as a boy or girl craves it, and should be closely associated with general education.

Another undesirable effect of the habit of using the first part of the university years for general education and the later part for specialized education is that general education suffers by that arrangement. In the later years of specialization the general liberal interests tend to be forgotten, or to be looked upon as the relatively unimportant concerns of

adolescence. Specialization comes to seem the really important part of education and of life.

General education and specialized or vocational education should proceed together. Specialized or vocational education may well begin even below the intermediate school, as soon as a boy or a girl shows a live interest in some field. On the other hand, some elements of general education should continue to the end of the period of college or university training.

Of boys, and girls who continue schooling beyond the eighth year, a considerable number will continue for only a year or two. For them, years nine and ten should include a considerable element, at least a half of the total time, given to specific vocational training, and the remainder to general education. For those who plan four years of secondary school, but will go no further, the element of general education might vary from over a half of the time for the first year to about a third for the fourth-year, the rest being given to vocational education. For students planning to continue to college and university, the greater part of the class room time for the four years of secondary school may well be given to general education. Time spent in part-time practical work would not be included in any of these estimates, but only that given to the more formal academic programme. This time distribution, however, is not to be taken as final or rigid. It is stated here only as a suggestion and each college and university will have to work out the details of the scheme with reference to its special needs and specific character.

8. *Importance of Selection of Material for General Education Courses*—In view of the limitless range of human knowledge, any effort to get a general view may seem utopian.

The concept of all-round education requires rigorous and discriminating examination of the contents of every pro-

ject, and of the course as a whole, to see that the more important elements are included and the less important eliminated. Such examination will radically change the contents of many courses now given in our universities, will eliminate some courses entirely, and will introduce others. In a live society that process of revision will never be complete. It is one of the most exacting in higher education and requires live interest, creative thinking and much freedom of exploration. It is greatly handicapped by such regimentation of teaching as now exists in our universities.

There is a common impression that the conventional degree of detail in which a subject is taught is reasonable and essential and that any lesser degree of detail would cease to be thorough teaching, and would be a smattering. On the contrary, the degree of detail in which a subject is taught has no necessary relation to scholarship. In some cases great detail is of the very essence of accurate scholarship. In other cases excess of detail may be a serious impediment to clear scholarly treatment. It was said of a great physicist that he had capacity to take a great mass of detailed information and to emerge with conclusions of clear, simple brevity. We have seen zoology courses in our universities so loaded down with taxonomic details that the student would have difficulty in getting over-all scientific concepts. We have seen other, much briefer, courses in which students were made acquainted with the methods of critical scholarship. General education, if wisely directed, will result in a new quality of mental range and grasp by helping students to understand general principles by means of pertinent cases.

9. *Science in General Education*—As a part of general education for living, every step of education from primary school to the completion of undergraduate university work should include teaching of science. The place of science in general education should be to help the student to understand and to use the scientific method, and to have an active and intelligent interest in the whole of the physical

and biological world, and to achieve those results without taking so much time as to crowd out other equally vital interests.

In each of the major fields of science the student should become acquainted with the basic vocabulary in that field, with the major concepts, and with typical cases of illustrations which will make the concepts real to him. The aim in science for non-science students in general education should not be to make the student a qualified scientist in each field, but to give him such introduction to each that his general reading and experience in that field will be interesting and intelligent, and that his self education in each field shall be facilitated.

For students making some science their chief field an initial course in that science should commonly have a different treatment than that included in the general education of the non-scientific student. It may be more detailed, more rigorous, more in the nature of a foundation for later specialization in that field. The aims of all-round unified general education cannot be well achieved without loss of time unless this need is recognized for different kinds of science courses for science and non-science students.

10. *The Humanities in General Education*—Whitehead writes, "The true task of education is so to reconcile the sense of pattern and direction deriving from heritage with the sense of experiment and innovation deriving from science that they may exist fruitfully together".

Each age tends to feel that its particular contribution to human life and culture is most important, and tends to ignore what other ages have achieved. It is the business of the humanities to conserve and to transmit the achievements of the human spirit and to discover their applications to the life of today. General education in the humanities should aim to give each student a substantial introduction to each of the major disciplines included in the liberal tradi-

tion. It is not enough that the student be introduced to literature *or* history *or* philosophy *or* the fine arts. In each field he should get his bearings, learn the basic vocabulary, become acquainted with the central concepts and with illustrations or cases, and should be on the way to life-long interest and self-education in each field. Just as the scientific temper disciplines and informs any study in the humanities, so history, language and philosophy discipline and inform science. For instance, science cannot be at its best without the critical study of language. We think largely with the use of words, which are symbols for ideas. Unless we learn to use and to organize words clearly and effectively our thinking will lack precision and accuracy. Effective use of language is a powerful help to good scientific thinking, and especially to communication in science, as well as a necessity in the humanities.

11. *General Education in Secondary Schools*—General education at the secondary stage should include an acquaintance with one's physical environment; an introduction to the basic ideas of science, physical and biological; the precise and effective use of language as a means of communication, and appreciation of the higher values of life as enshrined in literature; and an understanding of the processes involved in working and living together. These should be presented with great simplicity in the early years and with gradually increasing range and thoroughness as the year pass.

Students in classes nine and ten can be easily made familiar with the outstanding elements of their physical environment, with the stars above, the rocks around, the significance of geographical forms and location, the meaning of the inevitable experience of weather, climate and air conditions. They can be made aware of the general behaviour of matter and energy. They can be introduced to the plant and animal life that surrounds them and made conscious of the ways in which a man's physical life and health may be

made to sustain his life purposes. The same applies to a purposeful teaching of language and literature, mathematics, the elements of social sciences and the fine arts. The amount of language required will vary at different stages of education in different parts of India. During grades one to five the pupils will learn only the mother tongue ; in grades six to eight emphasis should be on the mother tongue and the federal language ; from grades nine to twelve the study of English will be added to these. Students whose mother tongue happens to be the federal language will be required to study another classical or modern Indian language.

By the time a student has completed secondary school (high school or intermediate college), if he is intelligent and has been well taught he may have such an introduction to several of the fields mentioned that he can read and observe understandingly in each field, and can continue his self-education without further formal teaching.

We are strongly of the opinion that the content of general education, as indicated above, should be incorporated in the secondary school and college courses. We do not propose, in this place, to review each stage of education and suggest how this content of general education could be related to it. Taking our present arrangement, we suggest for the consideration of the authorities concerned the following modified scheme of courses, which without departing too radically from our practice may help to make that practice more consistent with itself and less open to serious educational objection than it is now.

The course of study in the ninth and tenth grades may include :

1. Mother Tongue (Correct and effective use of language, acquaintance and appreciation of select literature).

2. Federal Language (Comprehension and use in simple everyday situations).

or

A classical or Modern Indian Language (for those whose mother tongue is the federal language).

3. English (Comprehension and simple composition).
4. Elementary Mathematics.
5. General Science (Physical and Biological).
6. Social Studies (including a brief outline of world history with special emphasis on the history and geography of India).
- 7, 8. Not less than two of the following subjects :—
 - (a) A classical language.
 - (b) A modern language.
 - (c) Additional Mathematics.
 - (d) Physics.
 - (e) Chemistry.
 - (f) Biology.
 - (g) Additional History.
 - (h) Music.
 - (i) Painting.
 - (j) Craft-work.
 - (k) Domestic Science.
 - (l) Book-keeping and Accounts.
 - (m) Typewriting and Commercial Practice.
 - (n) Agricultural Science.
 - (o) General Engineering Science.

The course of study in the eleventh and twelfth grades will include the following :—

1. Mother Tongue.
2. Federal Language

A Classical or Modern Indian Language (for those whose mother tongue happens to be the federal language).

3. English.
4. General Science (Physical and Biological)
or

Social Studies (including elements of Economics and Civics).

- 5-7. Not less than two of the following subjects :
 - (a) History (Indian, European, World).
 - (b) Geography (and Geology).
 - (c) Economics.
 - (d) Civics.
 - (e) A Classical Language (Sanskrit, Persian, Arabic, Latin, Greek).
 - (f) A Modern Indian Language (Hindi, Urdu, Bengali, Marathi, Gujarati, Tamil, Telugu, etc.).
 - (g) A Modern European Language (English, French, German, etc.).
 - (h) Logic.
 - (i) Psychology.
 - (j) Music.
 - (k) Drawing.
 - (l) Home Science.
 - (m) Physiology and Hygiene.
 - (n) Mathematics.
 - (o) Physics.
 - (p) Chemistry.
 - (q) Biology.
 - (r) Elements of Accountancy and Book-keeping.
 - (s) Elements of Banking.
 - (t) Business Methods.
 - (u) Economic History and Economic Geography.
 - (v) Steno-typing.
 - (w) Industrial Organization.
 - (x) Commercial Arithmetic.
 - (y) Elements of Soil Science.

12. *General Education in Colleges*—General Education should continue into the more mature years of the student's life. It should aim at making him familiar with his physical and social environments, and with human institutions, aspirations and ideals.

He should have an understanding of the phenomena of nature around him, both animate and inanimate, and should acquire habits of precision in their observation and measurement; should know of the evolution of fundamental scientific concepts, of cross-fertilization of one science by another, and of the social significance of scientific advance and its bearing on his own personal health, mental and physical.

He should have an understanding of his social heritage and of the problems of organised society, and should develop intelligent social attitudes for effective participation in community life. He should be aware of the moral, intellectual and æsthetic values expressed in literature, art, religion and philosophy.

One of the fundamental defects of our education is the failure to recognise that fine arts like music and painting, drama and sculpture are authentic statements of experience. In the graphic and plastic arts man has recorded his deepest insights about life through colour, form and sound. They heighten and diffuse æsthetic sensibility and good taste and make us sensitive to beauty in all its forms. The study of the arts in general education should aim chiefly at the appreciation of arts as forms of human expression, at the awakening of students' sensibility to beauty, and his desire to create beauty in his everyday surroundings.

These objectives can be achieved by giving courses in mathematics, scientific method, physical science, biology, and psychology; in social studies (economics, politics, history, administration) and in the humanities (literature, philosophy and art).

The universities will have to devise ways and means for giving these general courses to their undergraduate students and naturally work out the scheme in their own distinctive manner. They will, perhaps, have a different number of such courses in various places, and the time devoted to them may also differ. We think it should be possible to organize, say, ten to twelve 3-month general education courses of 20-25 hours to cover this ground.

We suggest a similar course during each of the three college years to deal with religious values. During the first year such a course might well treat of the lives of great religious leaders of all faiths, the second year may be used for presenting the most universal elements of the great religious scriptures; and the third year class may be engaged in a study of the problems of philosophy of religion.

Of the general education courses the student may select just those which cover the ground not effectively covered by his special subject, and leave the rest. A student of physics may, for instance, drop the general courses in mathematics, scientific method and physical science, as he will have more detailed courses in the same fields. A student of economics or history may leave out some of the general courses in social studies. A student specializing in philosophy may waive the general courses in philosophy and psychology. On an average each student will have to take about nine of these general courses which works out to one course per term for the three years of undergraduate education.

13. *First Degree Course : Arts and Science*—This will be of three years' duration. In addition to these courses on general education and religion, Arts and Science students, whether for the Pass or the Honours courses, will have to study :—

(1) The Federal Language, or if that happens to be the mother tongue, a Classical or a Modern Indian Language ;

(2) English ;

(3) and (4) For Arts students, not less than two special subjects, preferably one from each group :

Humanities

- (1) A Classical or a Modern Indian Language.
- (2) English, French or German.
- (3) Philosophy.
- (4) History.
- (5) Mathematics.
- (6) Fine Arts.

Social Studies

- (7) Politics.
- (8) Economics.
- (9) Sociology.
- (10) Psychology.
- (11) Anthropology.
- (12) Geography.
- (13) Home Economics.

(3) and (4) For Science students, not less than two special subjects from the following list :—

- (1) Mathematics.
 - (2) Physics.
 - (3) Chemistry.
 - (4) Botany.
 - (5) Zoology.
 - (6) Geology.
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Specialisation in Education

J. W. AIRAN

“At sixteen and seventeen boys and girls have, or are approaching, four new types of experiences. They earn money ; they have more money to spend ; they are ‘going steady,’ and before long they will marry ; they pay taxes and will soon be voters. They will do all these things whether we have ‘county colleges’ or not. How does a county college then come in?”

—The Goeffrey Crowther Report

This refers to the situation in Britain, and can as well be said of our boys and girls. As democracy, or the sense of political independence and power, develops in India there will be a growing number of young people keen on voting and getting votes ; as industries and projects multiply an increasing number of our boys and girls will have more money to spend. And here, as in Britain, all these things will happen whether we have colleges or not. Moreover, during these crucial days of political adjustments, as the idea of *Panchayat Raj* gains ground, there is every possibility of persons with just the minimum university qualifications holding important places in public life, and participating in *policy-making decisions* which will affect the whole life of the country, including the life within the universities. Should it not therefore also be the duty of the University to provide a wider base of understanding for those who are anxious to complete their *formal* education at the B.A./B.Sc. stage in order to plunge into the arena of public life? How far is the present-day education able to equip the students to make moral decisions when the time will come for them to do so? Granting that what is educationally ideal may not always be attainable in practice, it was felt that nothing should prevent universities from setting goals which can be reached in the foreseeable future. What are these goals, and how can they be

reached? These and similar questions were discussed at the Sixth Annual Staff Seminar organised at Khandala by Wilson College in March 1963.

In all there were more than 40 participants, including two guest-speakers : Professor Phillips Bradley, the Chief Cultural Affairs Officer of the United States Information Service and Professor K. S. Yajnik, Director of the Department of General Education, M. S. University of Baroda. The addresses by the guest-speakers were followed by group discussions and a plenary session. The responsibility for preparing the final report was entrusted to a sub-committee. What follows is a brief summary of my personal impressions of the deliberations at the seminar.

The two addresses mainly dealt with general issues and raised such questions as : What should a student reasonably expect from his college? Who should really be going to college? What exactly does a college offer to its student? What is the responsibility of the college to the community in which it is situated? How are specialists trained, and how can we get *better* specialists?

The expectations :

While admitting that a student should expect to find that *skills, knowledge, and insight* should all increase in the course of his time in college, it was pointed out that, unfortunately, quite a disproportionate amount of the time of the student in India has to be spent in improving communication skills, because of language barriers, and the obvious difficulty of a medium of instruction which is not the student's mother tongue. Further, our thinking about his capabilities is largely influenced by our judgment of his academic standards as revealed through his performance in a totally foreign language. This is not fair to the Indian student. On the other hand, if all these expectations of the student have to be fulfilled, the student himself must be of a calibre to profit by his college education.

The 'New' Student :

This raised the question of 'selection' of students, as also of the so-called 'wastage'. It was pointed out that while India is economically not in a position to provide college education to every one who may wish to join college (even if he is not likely to be benefited by college education), the urges and aspirations of the people of *new* India, and especially of the 'new*' student cannot be ignored. And at the same time in order that universities can build up and maintain adequate academic standards, some kind of selection is in order. But this selection should not be negative in character. It should be positive, resulting in proper direction, so that the student can take courses from which he will benefit. This may result in the case of some in being deprived of an opportunity to go to a college of liberal arts altogether. This may be particularly frustrating in the case of the 'new' student, for whom even a short period of time in college would be worth-while, especially at a time when India is experiencing a tremendous social upheaval. When viewed from this, angle the idea of 'human wastage' as linked with failures at the university examination may need a re-examination.

Bifurcation at an early stage :

Rapid technological developments call for specialization, and each specialization, in order that it may work smoothly, tends to become more and more exclusive. This has influenced the university teaching, and we have in Bombay University, for instance, bifurcation, as between Arts and Science, at the very start of the student's college career. A student who chooses science in his first year will have completed his university education in four to six years

*The 'new' student, whom Sir Eric Ashby describes as one whose parents did not have the benefit of higher education and hence in whose home there are no university traditions, is a growing phenomenon in Britain. We are aware that this is more so here.

without having had an opportunity to gain familiarity with the humanities or the social sciences, and the student joining the First Year Arts class will in the same way complete his college education without gaining any acquaintance with chemistry, physics or biology, even though all around him he may see growing evidence of the working of these sciences. Leaving aside a possible argument that nothing prevents these students from knowing about all these subjects in this age of paperbacks and audio-visual aids, the problem is one of *formal* recognition of the need for a broad-based education for our young people. Bifurcation at such an early stage ignores on the one hand that human beings cannot be compartmentalized, and on the other hand that there is a great potentiality in planning effectively *integrated studies* for the development of character and understanding in integrated human beings. The seminar did recognize the country's need for specialists in her immense task of development and reconstruction as reflected in each of the Five Year Plans ; but it was also emphasised that a careful distinction should be made between 'specialists' and 'technicians.' If this were done, and if the degree-conferring privilege were not confined exclusively to the universities, the universities may proceed a little more freely to identify and pursue their ultimate goals. They may then concentrate on *specialists* rather than on *technicians* to meet the current needs of society, and thus produce *better* specialists. This they can do, it was pointed out, by 'concentrating on abilities, and not by merely devoting more and more time to factual content'. Dr. Yajnik was convinced that "specialization to be effective must be built on a firm 'general' base", and that more of 'General Education' will give us *better* doctors, engineers and lawyers. He suggested that only those who were suited for such training should be accepted, since the result of indiscriminate admission is "hundreds of minimally qualified graduates looking for employment in occupations in which they are not interested any way".

Integrated studies :

Questions were raised whether this idea of bifurcation was based on genuine or imagined and induced differences and whether the adolescent was more fitted and eager to study a few subjects in depth or many in breadth. If an integrated First Year course were introduced, then the need for the decision to choose between Arts and Science would be postponed at least for a year. Whether this will make any difference, will, it was pointed out, depend on entrance requirements also. Both specialization of a rudimentary kind and General Education can proceed smoothly if (a) a careful consideration was given to the minimum requirements which would enable a student to pursue some professional training at a later stage, and (b) a clearer understanding of the *aims* of General Education were gained. Thus, for example, the preparation of intending medical students might very well be made specialised and restricted in specific branches of science, and more general in its attention to general knowledge, language, etc. If the time devoted to the former were reduced, then there would be more opportunity of expanding the latter.

Similarly while determining the place of literary studies in any integrated curriculum the difference between (a) literature to be studied in an appreciative and critical way in any language, and (b) books written in a given language on different subjects, should be kept in mind. Thus, a book may be good sociology, but very mediocre literature. On the other hand good literature *may* produce excellent history, psychology, or philosophy : but it should be considered primarily as literature—as art. It was pointed out that unfortunately students themselves are often unaware of the long-term advantages of literary studies in increasing their understanding of themselves and of the world in which they live. Factors such as these should be

taken into consideration in planning 'integrated' studies. It will not be advisable for the university to draw a hard and fast line all through vertically during the undergraduate period of study, between students who are expected to study subjects in depth and those in breadth. That division would more appropriately come at the post-graduate stage. After all, while imparting knowledge, and perhaps insight as well as skill, in certain fields, the college must also help young people to become good citizens. This is the obligation the college owes to the community in which it is situated, and this it can discharge more meaningfully through integrated studies, at least at the initial stages, rather than through compartmentalization of its students, as is done at the moment.

While working on suggestions for a revised curriculum, the seminar felt that since a fully integrated course of General Education at the moment appeared to be out of the range of probability, at least the benefits of the 'general approach' could be enjoyed by our students, so that a minimum impact would be felt on early specialization which we have. In the proposals the seminar prepared for the first two years, about a quarter to one-third of the subjects are those in which the student may specialize later, and the current structure of the 'First Year Arts' and 'First Year Science' syllabuses is not disturbed, but courses are suggested which would bring them together. The details are given in the end, but the main features may be outlined here :

Mathematics would continue to have two papers, but they should be clearly defined and organized as Mathematic Paper I, which would be 'descriptive' mathematics, and Mathematics Paper II which would be 'pure' mathematics.

The syllabus of the 'Ancient Indian History and Culture' course be revised so that Sanskrit selections could be integrated into the requirements.

Two new courses, 'Science of Society' and 'Science of Life' should be framed as follows :

'Science of Society' should be a co-ordinated course of elements of civics, administration and sociology.

'Science of Life' should incorporate elements of biology, physiology and biochemistry.

It will be seen that 'Science of Society' is recommended as the bridge-subject between Arts and Science students, and literary appreciation is offered as an option for Science students.

Suggestions made for the third and fourth year courses need further consideration, since the basic question as to whether B.A., B.Sc. are a preparation for M.A., M.Sc. or they are courses complete in themselves has not been fully discussed. Is M.A., M.Sc. a mere *continuation* of B.A., B.Sc. ?

The Seminar was reminded by Dr. Bradley that any programme of General Education or integrated studies which is intended to provide a firm base for the specialization which must follow later, must have two essential prerequisites: (a) At least a sufficient number of faculty members must be committed to the *aims* and *methods* of the programme, and (b) they must have an experimental approach. The experimental approach was spelled out as a willingness to try different professors dealing with different levels of student ability and changing around where necessary, new methods like workshops and extended projects, new forms of examination, and consultation with the students themselves about both the contents and the methods of the programme.

Appendix :**Suggested Curriculum****I. First Year Arts :**

1. English Prose and Poetry (Selections chosen to attract and retain the student's interest and imagination, taking into consideration the limited command of English possessed by most of them).
2. Composition in English.
3. Additional English/Marathi/Gujarati/Hindi (Emphasis on literature rather than on language).
4. A classical or a modern European language.
5. Compulsory Hindi.
6. *Either* (i) Science of Society, (ii) Science of Life, (iii) Ancient Indian History and Culture.

Or (i) Mathematics Paper I, (ii) Mathematics Paper II, (iii) Science of Society.

II. First Year Science :

1. Physics.
2. Chemistry.
3. Mathematics I (Consisting mainly of statistics and calculus).
4. Science of Society.
5. English Composition (Emphasis on language skills).
6. *Either* Mathematics II (algebra, geometry, trigonometry) *and* Literary Appreciation or Science of Life.

Or Biology *and* Literary Appreciation.

III. Intermediate Arts :

1. English Prose and Poetry.
2. Composition in English.
3. Additional English/Marathi/Gujarati/Hindi.

4. A Classical or a Modern European Language.
5. World History (starting with modern period, and returning to the earlier periods in the second term only).
6. Economics (emphasising more strongly the reference of principles and description to *Indian conditions*).
7. Logic (emphasis on deductive rather than on inductive) *or* Mathematics.
8. Compulsory Hindi.

IV. *Intermediate Science* :

1. Physics.
2. Chemistry.
3. Mathematics *or* Biology.
4. English Composition (without texts).
5. Readings from Science *in English or* Literary Appreciation in Marathi/Gujarati/Hindi. (This would leave out Compulsory Hindi and the additional languages).

Higher Education in India—a Survey*

DR. D. S. KOTHARI

In the modern world, with its increasing dependence on science and technology, universities hold a unique place, and their role and influence in determining the pace of progress—material, cultural and even spiritual is both powerful and profound. Perhaps, there is no other institution or agency which in this respect is of comparable importance. The mission of universities is to provide society with good and competent men and women trained in arts, science and technology, medicine, agriculture and other professions, who above all are imbued with a sense of high-minded dedication. Equally important is their mission to seek and cultivate new knowledge, and to engage themselves vigorously and fearlessly in the pursuit of truth. Shri Nehru said in a Convocation Address, “A university stands for humanism, for tolerance, for reason, for the adventure of ideas and for the search for truth. It stands for the onward march of the human race towards even higher objectives. If the universities discharge their duties adequately, then it is well with the nation and the people”.

It is common knowledge that in education many of the fundamental problems with which we are concerned also face most countries, including the more advanced ones. As such there is much we could learn from the experience and thinking of others, though we need not necessarily accept or adopt their views and practices. Almost everywhere there is a marked increase in student enrolment to meet the requirements of expanding economy and other national needs; there is an acute shortage of

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teachers partly because of the increasing drift to industry and other avenues of public and private employment, and the shortage is further accentuated because of rising student numbers ; there is much serious concern that in many places there is too much 'teaching' but relatively too little of good teaching and far too little of good research ; there is the problem of specialization and insulation, and its relation to inter-disciplinary communication and the needs of liberal education ; there is too much fragmentation and compartmentalization of knowledge, and not only are there wide gulfs separating humanities, science and technology, but the bridges are far too few and even these are often unused ; and there is the important and pressing problem of collaboration and mobility of staff between universities, national laboratories, industry and also government scientific departments. There is also the complex and far-reaching problem of university autonomy, of relative freedom from Government control and outside interference, of freedom from internal strife and bigotry, and these can take many different and ugly forms.

The universities are almost perennially faced with the nearly insuperable difficulty—this applies to us with particular emphasis and acuteness of meeting the ever-expanding requirements of teaching and research with inadequate resources and meagre grants. Again, the administration of a university is no easy task. In the wise words of Sir Eric Ashby : "... a university is a society, not a public service. Its vitality depends on the maximum opportunity for initiative being distributed among the maximum number of members of the society. You cannot issue directives for scholarship and you cannot devise assembly lines for research. Conformity, orthodoxy, the party line, are out of place in the academic world".

In a sense the central problem facing us, which is basic to everything else in the field of higher education (in

fact, all education), is to *raise quality and reduce wastage* (particularly that resulting from large-scale failures of the order of 50 per cent at examinations).^{*} To progress in this direction it is most important that we take urgent and energetic steps to raise the quality and strength of the teaching staff, to make available good books at reasonable prices within easy reach of our students, and to provide 'reading-seats' in libraries and 'day-students homes' for a substantial proportion of our students. And in whatever we do, the student must always be at the centre of our attention.

The number of universities in India is 55 and the number of institutions "deemed to be universities" under the UGC Act is 5. The total enrolment in the Universities is now a little over a million. The number was about 0.5 m. in 1951, 0.8 m. in 1956, and 1.1 m. in 1961. (The ratio of total enrolment of 1951 to 1961 is 2.17—the ratio is 3.37 for enrolment of women). This represents an average yearly increase of about 10 per cent and is equivalent to a doubling period of about 10 years. Even an increase of 2 per cent per year in university enrolment, to keep pace with the rise in population at that rate, means 100,000 additional students over a period of 5 years. This number is comparable to the total strength of the universities in the U.K. which is 111,400. (The number of full-time university students in the U.K. increased from 83,500 in 1951 to

^{*}"The overall failure rate in British Universities, those who enter but leave without a degree is probably 15 per cent... In the first place university failures are uneconomic... Secondly, the intellectual life of the university is affected... Thirdly, failure at university is a penalty carrying pain and humiliation, not to mention loss of career prospects, that is altogether too savage to be visited on so many young people on the threshold of their adult lives. It is also an arbitrary one, often meted out as a result of impersonal examinations whose accuracy is highly dubious, and whose applicability to first-year students, necessarily finding their feet in university working methods at very different speeds, is problematical." N. Malleon, *New Statesman*, 28 April, 1961. Also see *Access to Higher Education in India* by K. G. Saiyidain and H. C. Gupta, UNESCO, New Delhi (1962).

85,200 in 1956, and 111,400 in 1961, and is expected to reach 150,000 in 1966-67, that is at the end of the present quinquennium, and probably some 200,000 by the mid-1970s. These figures do not include the 22,000 places in the CAT i.e. Colleges of Advanced Technology. The yearly output of scientists and engineers by mid-1960s is likely to be 20,000. Women students constitute about 17 per cent of the total, the corresponding figure for the U.K. being 24 per cent. A large proportion of the students, about 85 per cent of the total, receive their education in affiliated colleges of the universities. There are some 1,300 colleges in Arts/Science/Commerce, 111 in Engineering and Technology, (with an early intake of about 14,000 students), 70 in Medicine (intake of about 6,000) and 58 in Agriculture (intake of about 5,000). The detailed statistics are given in the University Grants Commission report: *University Development in India—a statistical report 1961-62, (1962)* ”.

The total number of teachers in the universities and colleges is about 63,000* (including tutors and demonstrators) and the number of professors is some 14 per cent of the total. This gives a pupil-to-teacher ratio of about 15.6. In the U.K., the ratio of professors to teachers was 1 to 1.7 in 1937-38, but it has fallen now to 1 professor to 3.5 lecturers (*Nature*, June, 9, 1962, p. 902).** The distribution (for the U.K.) of full-time academic teaching staff grade and faculty-wise, for 1938-39 and 1958-59 is given below (E. B. Butler, University Students, Staff and Recurrent Grants, Pre-war and Post-war; *Journal of the Royal Statistical Society* 125, 118 (1962) :

We have today in the country receiving higher education about one person in every 50 of the corresponding age-group. The figure for the U.K. is one in about 25, and for the U.S.A. one in five. In the U.S.A. to quote Brode, “approximately 35% of the persons of college age enter

(See Footnotes and Tables on page No. 67)

college and about a third of these complete only junior college work or drop out for other reasons prior to graduation. The balance, or about 20% of the persons of college age, graduate from college... While the nation as a whole has been expanding at a fairly steady rate of about 1.7% per year in population... the college graduate population still probably continues to grow at about 5% per year during most of this decade". (W. R. Brode, 'The Growth of Science and a National Science Program', *American Scientist*, March 1962. Also see in this connection Gerald Holton, Scientific Research and Scholarship, *Daedalus* Spring 1962).

*This figure does not include teachers under the Board of Intermediate Education in U.P., M.P. and Rajasthan.

**Full-time Academic Staff Employed in Teaching Departments.

	1956-57	1960-61
1. Professors	1,459	1,627
2. Readers, Assistant Professors and Independent Lecturers	757	888
3. Senior Lecturers	1,131	1,490
4. Lecturers	4,903	5,770
5. Asstt. Lecturers and Demonstrators	1,176	1,460
6. Others	1,059	1,180
Total ...	10,485	12,415

For U.K.: Percentage Distribution of Full-time Academic Teaching Staff by Grade and Faculty 1938/9, 1958/9

Figures in any particular column give staff in that grade expressed as percentage of the total staff

FACULTY	Year	Profs.	Readers	Senior Lecturers	Asst. Lecturers & Demonstrators	Others	%	Total staff No.	Index
Arts	1938/9	27.8	13.0	38.9	15.9	4.4	100.0	1,449	100
	1958/9	16.6	6.9	60.0	10.0	6.5	100.0	3,892	269
Pure Science	1938/9	20.4	7.9	40.6	24.0	7.1	100.0	1,260	100
	1958/9	11.7	9.0	58.1	14.1	7.1	100.0	2,780	221
Technology	1938/9	14.5	6.8	41.9	22.5	14.3	100.0	635	100
	1958/9	10.8	5.8	68.5	7.3	7.6	100.0	1,537	242
Medicine	1938/9	25.3	6.7	29.9	31.5	6.7	100.0	479	100
Dent. & Vet.	1958/9	14.1	8.8	54.5	12.9	9.7	100.0	2,352	491
Agricultural & Forestry	1938/9	9.4	4.1	33.9	17.5	35.1	100.0	171	100
	1958/9	6.2	2.0	38.1	9.4	44.3	100.0	564	330
All	1938/9†	22.3	9.2	38.6	21.4	8.4	100.0	3,994	100
	1958/9†	13.5	7.4	58.4	11.2	9.4	100.0	11,125	279

† Excludes Oxford and Cambridge.

The faculty-wise distribution of university students is given in Table I. For comparison the corresponding figures for the United Kingdom and Australia are also included.

TABLE I
Faculty-wise Distribution of University Students

Faculty	India 1961-62		U.K. 1960-61		Australia 1959	
	Actual enrolled in thou- sands)	% of total	Actual enrolled in thou- sands)	% of total	Actual enrolled in thou- sands)	% of total
Arts including Social Science ...	688	59.5	47	43.9	18.0	49.6
Science ...	337	29.2	26	24.3	5.0	13.8
Applied Science or Engineering Tech...	58	5.0	16	15.0	5.0	13.8
Medicine including Dentistry ...	40	3.5	15	14.0	5.0	13.8
Agriculture ...	25	2.2	2	1.9	0.9	2.5
Veterinary Science ...	5	0.4	1	0.9	0.4	1.1
Others ...	3	0.2	—	—	2.0	5.4
Total ...	1,156	100.0	107	107.0	36.3	100.0

Expressed in thousands the number of students are (for the year 1961-62), Pre-University and Intermediate Classes : $250+232=482$; First-degree classes (Arts/Science/Commerce) ; $219+146+59=424$; First-degree classes in Engineering and Technology, Medicine and Agriculture ; $45+32+14=91$; post-graduate and research : $68+5=73$ (the number of research students is less than one-tenth in post-graduate classes).

It is apparent (see Table I) that what is required in our case is not so much an expansion of enrolment in pure science subjects, as in medicine, engineering and still more in agriculture and veterinary sciences. Again, a basic weakness in our case is the relatively low proportion of students

engaged in post-graduate (M.A./M.Sc.) studies and in research.** For instance, our output of M.Sc.'s is about the same as the number of doctorate in science in the U.S.A. The total number of doctorate degrees (Ph.D./D.Sc., D.Litt.) awarded by Indian universities was about 3,900 in the last 5 years, science degrees being 45 per cent of the total.

As is now widely recognised the *doubling period*, variously estimated, of scientific knowledge is about 10 to 15 years. We are witnessing what may be called an 'explosion of scientific knowledge.' Even so, in a highly industrialised country such as the U.S.A., the proportion of college students doing science and engineering has remained nearly constant over the past 50 years at about 20 per cent of the total enrolment. The number of science graduates in the U.S.A. who go into non-scientific careers and do not make a direct use of their science education is estimated to be as high as 70 per cent. In the case of engineering graduates, the figure is about 15 per cent. The corresponding figures for our country are also likely to be fairly high.

**In the U.K. the proportion of students doing post-graduate work or research is about 16 percent of the total. The figure for India is 6.3 per cent.

The position (for 1959) in the U.S.A. is given in the following table. It deals with science subjects only. The total number of doctorates in science and technology and humanities was 9,360 in 1959.

Degree Field	Total degrees (in thousands)	Bachelors' degrees (in thousands)	Masters' degrees (in thousands)	Doctors' degrees (in thousands)
1. All Fields	60.08	48.34	8.22	3.52
2. Agriculture	6.78	5.43	1.01	0.34
3. Biological Sciences	18.20	15.15	2.00	1.05
4. Forestry	1.55	1.35	0.17	0.03
5. Mathematics	10.80	9.02	1.50	0.28
6. Physical Sciences	20.45	15.46	3.18	1.81
7. General Sciences	2.30	1.95	0.34	0.01

†Reproduced from National Science Foundation Publication
"The Long Range demand for Scientific and Technical Personnel."

The short doubling period (about one-third of a generation in duration) of scientific and technological knowledge and the close dependence of life and culture on science and technology have, for the first time in man's history, led to a terrifically *swift pace* of evolution and innovation in our technological and social environment. It confronts man with a radically novel situation and a new challenge. It lends a new significance and meaning to education. It makes it incumbent upon us that through education we learn how to meet the challenge of a fast-changing world, and acquire a high capacity to adjust ourselves to innovations. "We don't even know what skills may be needed in the years ahead. That is why we must train our ablest young men and women in the fundamental fields of knowledge, and equip them to understand and cope with the change. That is why we must give them the critical qualities of mind and the durable qualities of character which will serve them in circumstances we cannot now even predict."§

A university as stated earlier is, above all, a society of students and teachers dedicated to the pursuit of learning, accumulation of knowledge, its transmission to succeeding generations and exploration of new knowledge. (A good teacher is a 'continuing student'). A university combines education and discovery, teaching and research, and in this combination lies its peculiar strength. The experience of over a century beginning first with the German Universities, has conclusively demonstrated that teaching and research flourish best in combination and they both wither in isolation. The best of either is achieved in an environment where both are cultivated. The essential elements in the functioning of a university are (to quote from Sir Grant Robertson, *The British Universities*): "First, university students must work in constant association with their

§J. W. Gardiner: *Excellence, can we be equal and excellent too?* Harper (1961).

fellow-students, of their own and other faculties, and in close personal contact with their teachers ; they should start their work when young and be able to give their whole time to it ; secondly, university studies may be of great value for professional or practical purposes, but are pursued not for the sake of information, but for the disciplined training of the mind and for the attainment of truth ; thirdly, there must be a close connection between undergraduate and post-graduate work, and alike, for teachers and taught the higher and the lower work must not be separated. Co-operation in the advancement of knowledge is the surest way of securing precisely those qualities of mind and the atmosphere that stimulates all which transform an association of teachers and students into a real university department, and differentiate it from a polytechnic or a literary and scientific institute."

The total recurring expenditure of Indian universities is estimated to be some Rs. 65 crores for the year 1960-61. The annual rate of increase during the last few years has been relatively small ; it is about 18 per cent per year. The total expenditure in 1960-61 incurred by the universities in the U.K. is about £67 million (90 crores approximately) for the year 1960-61. It was £41.8 million in 1956-57. (The main sources of university income which provide the £67 million are (expressed as percentage of the total)—Parliamentary Grants—72.7, Fees—9.4, Endowments—2.8, Local Authorities—2.0, Donations and Subscriptions—0.6, Payments for Research—8.9, other sources—3.6 ; Total=100). The non-recurrent grants totalled £28.3 million (Building £20.7 million, Furniture and Equipment £6.3 million) in 1960-61 as against £20 million in 1957-58. The yearly expenditure (not included in the above figures) on assistance and scholarships to university students is about 35 million. Our expenditure per university/college student is about one-fifteenth of that in the U.K. In most of the advanced countries the expenditure per university/college student is of the same order as that of per capita national income. In our

case also the two figures are comparable—the cost per student is nearly twice the per capita income. The distribution of university expenditure on staff salaries, administration and so on, is shown in Table II. The figures for India relate to the average for the Central Universities (Aligarh, Banaras and Delhi). It is interesting to notice that the percentage expenditure on academic staff is about the same in the U.K. as in India.

TABLE II
University (recurring) Expenditure—its relative
Distribution—INDIA and U. K.

Head of Expenditure	INDIA (Average for Central Universities 1960-61)	U.K. (Average of all Universities 1960-61)
Administrative and other Staff ...	12.3	18.1
Salaries of Academic Staff ...	42.3	44.2
Laboratories, Library and Furniture, maintenance ...	6.7	13.8
Buildings (including Hostels) ...	7.1	3.1
Others	31.6	20.8
Total ...	100.0	100.0

Our resources are slender, and it is therefore all the more necessary that these are utilized to the maximum advantage. Economy in the construction of buildings and proper utilization of accommodation are most important. Norms and specifications for library buildings, lecture rooms, laboratories, etc. have been recommended by the Commission on the basis of expert advice, but variations within reasonable limits—plus and minus—may not only be made but even encouraged to take into account any special requirements and circumstances. The implementation of the building and other development programmes has been relatively slow in some cases, on account of difficulties sometimes beyond the control of the universities and the University Grants Commission. There is also a need, it appears, to improve and simplify the present procedures both at the UGC and the University ends for approval and

finalization of plans relating to buildings and other schemes. We are examining these and other matters in consultation with the Universities, so that our development programmes can proceed with greater speed. One has also to remember that the direction of the flow of ideas is often not the same as the direction of the flow of money and grants.

It is important to note that, as recently estimated, the expenditure on research in the case of universities in the United Kingdom is about 50 per cent of the total departmental expenditure. Also about 50 per cent of the time (on an average) of the University staff is devoted to research. The total expenditure on university research is about £26 million per year (that is, nearly Rs. 35 crores)—which is made up of £14 million of departmental expenditure and £12 million of overheads and non-recurrent expenditure. In connection with scientific research, an adequate provision of technicians is also important, and this matter deserves the attention of our universities. In the absence of adequate assistance for technicians, not only the time of the research workers is not used to the best advantage, but the level of research is also adversely affected.

The funds made available to the Commission for the Third Plan are Rs. 37 crores only. (The provision made in the Third Plan for engineering education is Rs. 142 crores; for medicine Rs. 57 crores and for agriculture Rs. 20 crores). The amount is very inadequate even to meet the top priority requirements of the universities. The Commission has given generally the highest priority to proposals for raising the quality and number of teaching staff, and development of libraries and laboratories. The visiting committees of the U.G.C. have visited most of the universities, and committees would be going to the remaining universities during the next few months. The committee on such occasions discusses on the spot the development programmes of the university with the Vice-chancellor,

members of the teaching staff and other members of the university. It then makes its recommendations to the Commission. (It is felt that it would be of real value to have from time to time an evaluation by Expert Committees of the progress achieved in the implementation of the development plans. Apart from other things, such an evaluation would be of real help in formulating proposals for the next Plan period). On account of limitation of funds at the disposal of the Commission, the actual sanction for the present has been limited to 70 per cent of the estimated expenditure on programmes approved by the Commission. It is expected that it would be possible within a year or two to lift the 70 per cent restriction currently imposed. In the implementation of the development programmes the universities have, and should have, considerable flexibility in the assignment of relative priorities to their schemes, and in the deployment of funds to the best advantage as regards teaching and research. We consider this to be essential if optimum use is to be made of the very limited resources.

I propose to say a few words about some of the matters which will engage our attention during this Conference. I hope I shall not unduly tax your patience and kindness.

The shortage of teachers in India is an acute problem. In fact, this is almost a world problem but is much more accentuated in our case. The report of the committee on post-graduate engineering education and research published in August 1961 points out the disconcerting fact that in the engineering colleges, "the shortage (of staff) at present is of the order of 40-50 per cent of the sanctioned strength in the institutions. It is also becoming increasingly difficult to attract persons of high calibre to the teaching profession. These difficulties will be felt even to a greater extent as further expansion of technical education is undertaken in the Third Five-Year Plan. The committee wishes to emphasise that unless the problem of staff is adequately solved, it will be futile and even dangerous to expand tech-

nical education any further. The foundation for post-graduate studies and research is laid in the first degree courses. If the standard of under-graduate courses falls due to inadequate teachers in the institutions, the foundation becomes weak and progress at the post-graduate level suffers."

Everything possible should be done to make the teaching profession really attractive. Reasonable salaries are important, but by no means everything. Opportunities of professional advancement, possibility of migration from college to university, and between universities, recognition by society of the value and importance of the teaching profession, would go a long way in attracting to the profession a reasonable proportion of men and women of high intellectual ability and character. Generally, it should be possible for a teacher to carry with him his provident fund, leave and other benefits in moving from one university to another. It would be desirable to provide a provident fund cum insurance policy in place of provident fund alone.*

Education provides a good illustration of the 'feedback' process. If things are so organised that every year an appreciable number of our best young men join our schools and colleges as teachers, we shall have a continually accelerating improvement in education. On the contrary, if we plough back into our schools and colleges young men with less than average ability, then standards would rapidly (exponentially) go down as years roll by. The key to a continuous improvement of standards is to feed back into the teaching profession every year a reasonable proportion of the best young men turned out by the universities.

"The quality of a university is always in direct proportion to the quality of its teachers." It is of the utmost importance to ensure that the highest standards are observed

* For example, see Report of a Committee on the Superannuation of University Teachers, UGC, HMSO (1960).

in the recruitment of the teaching staff. Appointments should be made on the basis of academic merit and suitability, uninfluenced by considerations of caste, regionalism and other extraneous factors. At one of its recent meetings, the Commission after carefully considering the matter, was definitely of the view that "appointments of teachers in the Universities should be strictly governed by their suitability for the work to be done by them (that is on the basis of academic achievement, personality and character), *no* consideration should be given to factors such as caste, creed and place of birth." Every possible encouragement should be given to young men of ability to join the teaching profession. If a person has outstanding work to his credit, young age should be no disqualification for appointment to university Chairs. In fact, other things being equal, it is in the interests of university education that young men still in the most creative period of their life be appointed to high academic posts.

The Commission have recommended the following scales of pay for university teachers :—

Professors	Rs. 1000-50-1500
Readers	Rs. 700-40-1100
Lecturers	Rs. 400-30-640-40-800

The scales have been introduced in the Central Universities and also in several State Universities (e.g. Panjab, Calcutta, Allahabad, Andhra, Gauhati, Karnatak, Kerala, Madras, Nagpur and Rajasthan). In the case of the State Universities the Commission will meet 80% of the additional expenditure during the Third Plan period. Thereafter the total expenditure will be borne by the University/State concerned.

It has been possible to introduce some improvement in the salary scales of teachers in affiliated colleges, but it is much less than what the Commission considers essential. Much larger funds will be required for the purpose than those presently available.

The Commission have recently adopted a scheme for assisting outstanding teachers to continue their teaching and research activities after superannuation. A teacher, under this scheme, is paid an honorarium of Rs. 4,000 per annum, and an annual grant of Rs. 1,000 for contingent expenditure.

The importance of having good textbooks, and of pricing them reasonably so as to be within the reach of students in general, was emphasised at the last Vice-Chancellors' Conference. Some progress has been made in this direction, but much more remains to be done. Every possible encouragement and incentive should be given to outstanding men to produce first-rate books. In deserving cases leisure and facilities should be provided to teachers for this work, and such work should receive due recognition.

The Commission has encouraged and assisted the universities to hold summer schools and seminars for teachers and advanced students. Seminars in special subjects are also organised jointly by the universities and the national laboratories and other research institutions. During 1961-62 some 15 summer schools/seminars were held. The subjects included: Theoretical Physics (many-body problem), Mathematics (set theory, topology etc.), Solid-state Physics, English, Economics etc.

A scheme is also being worked out to encourage 'academic mobility' by enabling selected teachers of one university to teach or carry out research for some time at other universities.

The problem of assessing the standards of education and research is as important as it is complex. A few things are immediately apparent. For example, the contents of the courses both in quality and extent are much superior now to what they were even ten years ago. Again, the universities now cover a far wider spectrum of knowledge than they used to do before. This is particularly true in

science and technology. It is also equally obvious that whereas standards in some universities appear to have gone down, there are other universities where they are much better than before. Further, even in the same university standards vary very much between one department and another. The most important component of a university is the teacher. Competent teachers make good students and indifferent teachers can only produce students of indifferent quality. During the last decade the universities have considerably expanded their student population and the number of properly qualified teachers has not increased very much. The reason is obvious. Student population can be raised by providing a few more buildings and other physical facilities, and these take only a couple of years, whereas it would take a much longer period of training to produce a first-rate teacher. The result, therefore, is that students now on an average have much less opportunities of coming into contact with and being influenced by first-rate teachers than was the case a decade ago. This, no doubt, is the most important single factor which has led to the deterioration of standards and discipline in Indian universities. Even now universities or rather the departments in universities which have a really competent staff and where the student-teacher ratio is not too unfavourable, the standards are much better than is generally the case. In fact, the standard in some of these departments will compare with the best in any country. In many cases, however, the students are taught by a staff which has little competence. In fact, it would be a distinct improvement if as a temporary measure such departments could be closed and the number of admissions raised in departments which have competent staff. After a few years when we have trained a reasonable number of competent men we could start more departments in the country. It would be useful to organise a survey of the relative distribution in the universities of the number of competent teachers and the student-staff ratio in relation to these teachers. A criterion for assessing research standards

is the number of published papers in standard journals. A related criterion is the number of references to Indian publications by other contemporary workers in the field. This would, in fact, give a better assessment than merely the total volume of publications.

We can also make a systematic study, at any rate in a few selected subjects, of the pattern and standard of question papers and the pass percentage during the last few years. Do the question papers of today as compared to those of ten years ago give more emphasis to the understanding of the subject or to cramming or is there no change at all? These and other things are under examination by a Committee under the distinguished chairmanship of Shri S. Govindarajulu.

The University Grants Commission Committee on examination reform submitted its report early this year.* The report has been circulated to the universities for their observations. The main recommendation of the Committee is with regard to some continuing assessment of the work of the students by the teachers concerned. The Committee says, "Teaching work should be done not only

* Also see *"Evaluation in Higher Education—Report of the Seminars on Examination Reform organised by the UGC (1961).*

Professor Linstead has observed: "We have just completed a survey of the fate of the freshman who entered the Imperial College of Science and Technology (London) in 1957 and I will compare this with the corresponding record for those who entered in 1952—five years earlier. The annual intake of fresh undergraduate increases during this period from 358 to 582, that is by two-thirds. The number successful rose from 78.8 to 84.3 per cent. The wastage (left from failure or for other reasons) fell from 14.7 to 14.1 per cent". A most interesting fact was the significant rise in the numbers successful in the minimum time of three years, i.e. with no repeating. This rose from 64.7 to 74.4 per cent" (Presidential Address to the Science Masters' Association (1962), *The School Science Review*, March 1962).

through lectures but through tutorials, seminars, etc. It will be desirable to hold periodical short tests on the work done in the tutorials and to maintain a record of the assessments made. This should be regularly evaluated. Each university may decide what weightage should be given to this." It is generally agreed that the number of examinations leading to a degree should be reduced. For example it is not desirable to have a university examination at the end of each year of the three-year degree course.

A number of 'review committees' consisting of eminent university teachers have been appointed by the University Grants Commission to look into the current syllabuses, and to make recommendations for their modernisation and improvement. Some of the reports (e.g. those on Bio-Chemistry, Botany and Chemistry) are under print. The Mathematics Report has just been issued. These reports would serve a most useful purpose in helping to improve our courses of studies.

The report on general education, prepared by an expert committee appointed by the University Grants Commission, has been published and circulated to the universities for their comments. The Commission has received a grant of \$1.75 lakhs from the Ford Foundation for assisting the programme of general education. General education can be of real value in making education interesting, meaningful and purposive. It is, however, not a cheap remedy and needs careful preparation and organisation of reading material by competent teachers. General education is less of a separate subject and more of an attitude or approach, which should permeate the entire course of study. In thinking about general education, or about the so-called division between science and humanities, it is well to remember the words of Sir Cyril Hinshelwood: "The division exists not

between arts and science, not between pure science and technology, but simply between those who adopt a truly liberal attitude towards life and learning (and the relation between them) and those who do not succeed in doing this. I do not believe that this has anything to do with the content of the subjects studied. I do not believe in the Two Cultures. I think that there are simply two kinds of attitude, and it is the business of universities to encourage the right kind."

The Ministry of Education appointed last year a Committee on Correspondence Courses and Evening Classes. The committee has already submitted its report on correspondence courses, and the report on evening classes is under preparation. It is generally recognised that correspondence courses and evening classes can and ought to play an important role in our educational programme.* In many countries a substantial fraction of the population receives its education through correspondence courses and evening classes, and the system is of special importance in relation to technical education at all levels. It may be observed that in the U.S.S.R. some 30 per cent of the students are in regular employment and obtain their higher education through correspondence courses and evening

* "There is no doubt that there are large numbers of people for whom postal tuition is the only practicable method of improving their education. . . . Why people take correspondence courses, and who they are, and how many, is largely guess work. 150,000 is thought to be the number at present involved—more than the university and C.A.T. populations put together. Hundreds of internal university students are taking correspondence courses in order to improve their examination prospects." ('Correspondence Colleges : The Sheep and the Goats' by Vt. H. J. Boyden, *Times Educational Supplement* May, 11, 1962).

The role of Evening Institutes in the field of education in U.K. is described in the Ministry of Education (UK) booklet 'Evening Institutes' (HMSO, 1959).

classes [R. V. Khokhlov, Times Educational Supplement, September 7, 1962]. In the proposed expansion over the next 20 years of the 'university population' in the U.S.S.R. from 3 to 8 millions (which implies an increase of 7 per cent per year), it is estimated that some 60 per cent would obtain their education in evening classes. Almost every university or technical institution in the U.S.S.R. conducts correspondence courses and evening classes. There is much that we can do in our country in this field.

In the case of the correspondence courses, it may be observed, lessons prepared by gifted teachers can be made available to a participant even if he is in a remote corner of the country. Unlike class-room education, correspondence courses do not suffer from the limitations of class-room accommodation, hostel capacity and so on. In fact, in the case of correspondence courses the larger the numbers the more economical the operation. Again, the system provides considerable flexibility with regard to combinations of subjects leading to a degree, as one is not circumscribed by difficulties of timetable and such factors. The system has certain inherent limitations, but it also possesses some definite advantages. It is hoped that the merits and flexibility of the system will be fully exploited. The University of Delhi has already started correspondence courses for degree courses in Arts subjects, and it is expected that these would be extended in the near future to science and other courses. In all these things it is, of course, most important that sufficient attention be given to the maintenance of adequate standards.

It is necessary to give high priority to the provision of staff quarters and hostel accommodation. About 18 per cent of the university/college students stay in hostels—the percentage varies considerably from one university to another. Also in several places the floor-area (of the hostel

rooms) per occupant is considerably less than 80 sq. ft.* We have recently appointed a small committee of Vice-Chancellors and College Principals to examine this matter. Apart from student hostels, it is important to make adequate provision for day students homes where they may have facilities for quiet study, and also, if possible, 'cheap meals.' The reading rooms in libraries also need considerable expansion. A library should be a sort of house of 'perpetual temptation' to students. One of the basic reasons for poor standards and high wastage at examinations is the fact that a large proportion of our students come from homes with no academic background, and can hardly find even a small corner in their homes for quiet study. In most cases they have to participate (and rightly so) in domestic chores, and are subject to diverse kinds of distractions which go with low-income households. It is, therefore, essential that liberal provision be made for reading rooms in libraries and in 'student-homes' (within the campus or outside) where they can do a major part of their reading and 'home-work.' In the universities in the U.K. libraries provide on an average (there is considerable variation from one university to another) reading-places for about one-

* The 'norms' for student-rooms, common rooms et. are given in the UGC publication 'Report of the panel on university-building—Hostels'.

It is of interest to note that in the U.K. the percentage of students in residence has not changed substantially during the last few decades, but the percentage of those living in lodgings has increased considerably.

	<i>Numbers Percentage of total</i>		
	1960	1939	1960
In colleges or halls of residence ...	28,094	25.1	27.0
In lodgings ...	52,288	33.2	50.3
At house ...	23,627	41.7	22.7
Total ...	104,009	100.0	100.0

["The National Union of Students (U.K.) discovered that nearly three-quarters of men students take paid vacation employment, and only slightly lower proportion of women". *New Stateman* p. 666, 28th April, 1961.]

fourth of the total student population. In our case the need is far greater, and the existing facilities are grossly inadequate. Establishment of reading-rooms and 'student homes' should be given a high priority. We should aim at providing within the next few years 'reading seats' for about 20 per cent of our student population in the universities and colleges.

A few words on the problem of the medium of instruction at the university stage may not be out of place. One does not expect that when we discuss a subject such as this one's views will be readily shared by others. It is sometimes heartening to remember that "if education can be defined in one word, that word is controversy; where concord arises, learning withers; where conflict rules, education flourishes." In dealing with the language problem we are concerned with a dynamic and creative situation, and a discussion of the subject will benefit us all provided it is free, frank and objective—and in a conference such as this it cannot be otherwise. The first condition for dispassionate discussion is a mind receptive and 'utterly at ease.'

It seems that so far as the near future is concerned universities have to function largely on a bilingual basis instead of a monolingual basis, namely, the regional language and English, as recommended by the National Integration Council (June 1962). For post-graduate study and research, and to serve as a link for inter-communication between the universities, and also with the outside world, English is an obvious choice for us in the context of the times. On the other hand, to facilitate understanding of difficult subjects and basic concepts, and to bring together workers and thinkers which is an essential process for advancement of science and industry in the country, the use of regional languages becomes almost a necessity. (Hindi should be taught as a compulsory language at the school stage to serve as a 'communication link' throughout

the country). As the National Integration Council (June 1962) has observed.*

“In the Council’s view, the change in the medium of instruction is justified not so much by cultural or political sentiments as on the very important academic consideration of facilitating grasp and understanding of the subject-matter. Further, India’s university men will be unable to make their maximum possible contribution to the advancement of learning generally, and science and technology in particular, unless there was a continuous means of communication in the shape of the regional languages between its masses, its artisans and technicians and its university men. The development of the talent latent in the country will also, in the view of the Council, be retarded unless regional languages are employed as media of instruction at the university stage.”

It is most important that the introduction of regional language as medium of instruction is not misinterpreted to mean shutting out of English from university life and work. In fact, for successful completion of the first-degree course a student should possess an adequate command of English to be able to express himself with reasonable ease and felicity, to understand lectures in that language, and to avail of literature in English (particularly scientific and technical). With this aim in view adequate stress should be laid on the study of English as a language right from the school stage. The study of Russian should also be on a much more extensive scale than at present.

As has been pointed out on several occasions, the present arrangement under which a large proportion of stu-

* The recommendations (relating to medium of instruction) of the Integration Council, as also the recommendations of the Sampurnanand Committee on Emotional Integration, are given in Appendix A.

dents at the first-degree stage, and also later, use their regional language for the purpose of examinations, though class-room instruction is given through the medium of English, is educationally undesirable and unsatisfactory. sudden switch-over in the medium of instruction for a student in passing from school to university has in most cases very unwholesome effects. In a student's life, the change from school to college is a crucial stage. On entering college he finds that there is a far greater demand on his powers of understanding and concentration than he was accustomed to at school. When to this is added the perplexity and difficulty inherent in a sudden change in the medium of instruction in going from school to college, no wonder that many a student feels bewildered and lost, and loses zest in studies. The difficulty of medium of instruction is added to that of subject-matter, and the two together become too much for a good many students. At the early stage of the under-graduate course it will be, therefore, an advantage if the bulk of the instruction is given through the regional languages. As one goes higher up the educational ladder, more and more instruction would be through the medium of English.

Whatever may be the medium of instruction, it is important (in the interest of academic mobility and for other reasons) that a teacher at the university stage should be entitled to lecture in English (even at the under-graduate stage), if he so desires. I am thinking—I need not say again—of the near future and not what the position would be, or should be, after some decades. In such a case a teacher would probably have to put in more effort in getting the subject-matter across than if he were lecturing in the students' own language. But the point is that the understanding and grasp of a difficult subject would be much better and creative if it was presented to students in their own language.

Whatever may be the policy and programme of the universities regarding the medium of instruction, it is important that energetic action be taken to produce books and literature, particularly scientific and technical, in the regional languages. This is important for a variety of reasons. It would help to bring together the elite and the mass of the community. It would assist materially in the progress of industrialisation. It would help in the dissemination of science and the scientific outlook.

As the Integration Council has observed, that change in the medium of instruction in a university is primarily a matter for the university concerned. For a variety of reasons and circumstances there cannot be a rigid formula in this matter which could be applied indiscriminately to all the universities. In the transition from English to a regional language as medium of instruction, every precaution should, of course, be taken to ensure maintenance of adequate standards. In fact, the purpose and also the desirability of the change should be judged by the improvement it makes in the quality and standard of education. We must proceed most carefully, but careful action is not synonymous with slow speed or no action at all. In fact, caution is meaningful only if it is tied to a policy of deliberate action.

The importance of a common linguistic link between the universities cannot be gainsaid, but what is still more important is that they should co-operate in joint programmes of teaching and research, in forging and sharing common aspirations and common aims. We should, with all the energy and enthusiasm we have, develop a corporate intellectual life amongst the universities in the country. And no impediment should be allowed to stand in the way of this process.

The Commission appointed a Committee in September 1961 to examine the question of establishment of new uni-

versities, and to suggest the broad outlines of a plan for the next few years. The Committee has submitted an interim report which has been accepted by the Commission. It is possible, it would be advisable to adopt a 'federal type' of organization for a university. A federal/unitary university provides greater possibilities, scope and incentives for improving the quality of higher education, specially at the post-graduate and research level. This is our most pressing need. In an affiliating university post-graduate work is generally spread over a number of colleges, and under such an arrangement it is often difficult and time-consuming to raise standards or to introduce any substantial reform in courses of study and examinations. Not unoften it tends towards mediocrity rather than the pursuit of excellence. On the other hand, in a federal or unitary type of university post-graduate education in any particular subject is essentially organised as *one unit*, and the best staff available in the university as well as colleges can be made available for the teaching of that subject. In such a university improvement of courses and standards, and examination reforms are relatively easier, and receive greater attention and encouragement than in an affiliating type of university. The committee recommended the establishment of federal universities at Indore and Jodhpur, and an affiliating university at Kolhapur. It also recommended (as a long term programme) the establishment of such universities at Bangalore, Hyderabad, Madras and Poona. The Committee felt that it would be of real value to have at least one federal type of university in every State.*

As we have repeatedly observed our most pressing need in the field of university education is to raise quality, specially at the post-graduate and research level. The pro-

* The capital cost of establishing a new, university (with a total enrolment of about 3,000 to 5,000 students) in a newly-developing country such as Nigeria is estimated to be £5 million without medical faculty, and £10-12 million with medical faculty, the recurring expenditure is estimated to be £2 million and £3-4 million respectively.

posed scheme of what are called Advanced Centres (for want of a better name) is a modest step in that direction. It is intended to provide substantial assistance in terms of competent and promising men and essential equipment to a number of university departments, carefully selected on the basis of their work and achievement. The essence of the scheme is a combination of *teaching and research*. The implementation of a scheme such as this cannot be an easy undertaking. It would require much serious thought and boldness in approach and implementation. It would demand active co-operation and team spirit on the part of participants. Many difficulties are likely to be faced in the actual working, but through determined effort there is no doubt they can be overcome. If this scheme works well, men trained in these departments would be available to other universities for their development programmes. It is hoped that within a few years most of the universities will have some departments engaged in advanced study and research of a level comparable to international standards.

Good work needs to be actively encouraged—that helps to generate more good work. There could, perhaps, hardly be a more effective way of accelerating good work than the establishment of the proposed “centres”, provided in their selection the basic criteria of merit, achievement and potentiality of development are satisfied. The primary aim of the scheme is to encourage ‘pursuit of excellence’.

The Commission proposes to start, in consultation with the universities, some 29-30 centres during the Third Plan period.

The question of effective collaboration between the universities, National Laboratories and other research organisations has been under consideration of the Scientific Advisory Committee to the Cabinet and other agencies concerned with higher education. It is apparent that for development of higher education and research in our universities, it is necessary and important (apart from promotion

of closer co-operation and academic mobility between the universities themselves), that we take full advantage for university work of the special facilities and resources available in institutions concerned with advanced work and research outside the universities, namely the National Laboratories of the Atomic Energy Commission and so on. Men of outstanding ability constitute our most valuable asset and it is also the most scarce. It would be of distinct benefit to us if we could in special cases obtain on deputation, for short or long periods, the services of outstanding persons available in governmental and non-governmental research organisation. In general, such deputations would not only benefit the universities concerned but also the lending organisations. The movement of persons, organised on the basis of a deliberate policy, between the universities, national laboratories, technological institutions, industry and government scientific departments can be of the utmost value and benefit to all concerned. We hope that steps in this direction would be taken relatively soon. In this connection, the recent Zuckerman Report on the 'Management and Control of Research and Development' is of unusual interest. The *Nature* in its editorial (July 7, 1962) says: "Lord Hailsham, for example, has repeatedly emphasised the importance of locating institutes for fundamental research in close relation with universities and the danger otherwise of such institutes stagnating within one or two decades and in addressing the Parliamentary and Scientific Committee last March he referred specifically to the report of the Zuckerman Committee on the organisation and management of research, although without, as does Sir Willis Jackson, considering the mobility of scientists in this connexion."

In certain fields, particularly in the domain of science and technology, the facilities and equipment required for research are so elaborate and expensive as to be sometimes beyond the resources of the universities. The same may, however, be available in National Laboratories and other

specialised institutions. We should do all we possibly can to make use of such facilities for university research and also post-graduate training.

Whatever the constitution or pattern of university organisation, and whatever be one's views on university autonomy, it is essential if a university is to fulfil its obligation and play its proper role in society, that it should in a real sense be free to select whom to teach, free to select its teachers, determine the courses of study and conduct its examinations. (We are of course thinking of a "real" university and not a pretence of it). The selection of students and appointment of teachers should be determined on merits, uninfluenced by considerations of caste, regionalism and such other extraneous factors. A university should be a place where the highest standards of work and conduct are expected, respected and cultivated. It should do all it can to raise the intellectual tone of society, and aim "at cultivating the public mind, at purifying the national taste and supplying true principles to popular enthusiasm and fixed aims to popular aspirations."

In the administration of a university—it is hardly necessary to say at a meeting like this—the important thing to ensure is the flow of ideas between and across different levels of the university hierarchy. In a university the principle that good ideas often originate at the lower levels of the hierarchy must be recognised and respected. As Sir Eric Ashby has stressed in *Technology and the Academics* (1959), "this principle of upward flow is vital to the efficient administration of a university and for the survival of autonomy and self-government—the principle of upward flow shall apply throughout the whole hierarchy and not merely between the Council and Senate. Not all professors consult their lecturers before decisions are taken as scrupulously as they themselves expect to be consulted by the lay governors in similar circumstances. As faculty boards become larger there is a temptation for an oligarchy of

senior professor to take over the responsibilities of government on behalf of their more junior colleagues. That way danger lies, for any weakening of the principle of self-government within the academic body makes it harder to preserve self-government within the university as a whole, and correspondingly harder to maintain the autonomy of the university in the modern democratic State."

It is sometimes said that a good many young men and women in the universities are not serious about their work, and are often casual and slovenly in their behaviour. The reason probably lies in the fact that we fail to place before them definite and worthwhile goals—goals which they should keep before themselves and which they should strive to attain. People almost always would work hard, unexpectedly hard, for something they believe in, but if aims and aspirations are missing then not unoften 'no work' becomes a more tempting substitute for honest hard work.

Our resources are limited, but by spending thought even meagre resources can be made to go a long way. We are engaged in a most challenging and at the same time a most rewarding task, and if we have faith, mutual understanding and dedication, today's aspirations will become tomorrow's actualities.

Youth and National Purpose*

PROF. G. D. PARIKH

The challenge we are facing today is immediate and formidable and we are determined to accept it. It is a challenge to our territorial integrity, our independence, our right to organise our lives in our own way, our basic commitment to the democratic way of life. It can appear in different forms on different planes, although its gravity was driven home to us when it appeared in the form of a brutal aggression on our territories a few months ago.

We must immediately prepare ourselves to meet effectively any recurrence of aggression ; and we must, in any case, rapidly build our strength in a massive measure so that no such experience may be repeated in future.

Our ability to inspire our young men and women, to harness their enthusiasm and their energies, to help them grow and equip themselves so that they might fulfil broad national purposes with competence and understanding will largely depend upon the image of themselves which our universities cherish. 'Ivory Towers' have hardly a place in the dynamic world of today, nor is the idea of a university merely in terms of examinations and degrees which reduced it to an 'administrator's paradise' sound or relevant to our times. True, universities must stand to some extent aloof from the currents and cross-currents, troubles and turmoil of events happening around them if they are to carry on their work satisfactorily. But in a developing society like ours, they must meet the needs of the community in a much larger measure than they do

*Extracts reproduced by kind permission of All India Radio from a talk broadcast in the National Programme series entitled Democracy Faces the Challenge.

elsewhere. They are therefore bound to get involved in the affairs of the community and must be able to keep their head above water in all such situations. Their freedom must generate a sense of social obligations and responsibilities and a desire to fulfil them, of course consistently with their primary responsibility of maintaining standards.

There is plenty of scope for purposeful efforts while avoiding regimentation on one side and a planless drift on the other. An 'ivory tower' is unconcerned with its surroundings, while the university in a regimented society mostly functions as an instrument of the state and loses its soul. We need universities which will be engaged in a dialogue with the powers that be about formulating the needs of the community and cooperating in devising ways and means of meeting them in an efficient and expeditious manner. The challenge confronting us is in fact a challenge to the very basic values universities everywhere seek to uphold.

As an immediate response to the challenge, universities have granted all necessary facilities and concessions to youngmen who have opted for active service. They have also recognised the need for all to go through the basic NCC training. A suggestion to this effect by the Defence Minister was wholeheartedly accepted by the Vice-Chancellors at a recent conference of the Inter-University Board and active steps are being taken to implement it from the next academic year.

Numerous suggestions have also been made to enable the universities to meet the large and growing demand for qualified personnel in the fields of Engineering, Technology and Medicine. Increasing the intake of students, reduction of the overall training period either through reduction of

the course or cutting down the holidays and vacations, adjustments in examination proceedings and increase in the frequency of examinations with a view to avoiding delays in the availability of qualified men, reduction of the wastage in these courses, are all being discussed, examined and accepted. The programme of practical training in Medicine is being oriented so as to augment the supply of qualified personnel to army hospitals. And the experience gained in these hospitals may also be considered for credit so far as the requirements of post-graduate studies are concerned.

It is hardly necessary for me to go into details. But I must again submit that all these measures are merely an immediate response to the challenge and need by no means be regarded as adequate for meeting its requirements. As a matter of fact, reorganisation and improvement of the entire activity is essential for the purpose, for it is essentially a challenge to build our democracy on strong and stable foundations. Several other aspects of educational activity will therefore have to be brought into focus in the near future and our attention will have to be concentrated on tackling problems presented by them.

Rapid progress or accelerated development is possible not only through concentration on the needs of the top ten but also through raising the level of the average. The latter is imperative for stimulating the best to be better as also for facilitating the success of their efforts. The quality of the average, the level of the human material with which they must work, is often a limiting factor on many achievements by the elite. That is why quantitative expansion of education is essential for its qualitative improvement. The crucial consideration for building a democracy is not the leader but the leadership as it obtains at all levels in social life.

The universities can also provide scope to young men and women for tackling a whole range of specific problems in a variety of fields. Their laboratories and libraries, the specialised and sophisticated equipment many of them possess, and the knowledge and experience of the teachers, can all be of immense use in this respect. It need not detract from their work in the realm of pure scholarship and research. But it can, at the same time, provide a proper orientation to the young people who must realise that 'it is not enough to know, one must also apply; it is not enough to wish, one must also act'.

Reviews

A New University: A. D. Lindsay and the Keele Experiment : W. B. Gallie, Chatto & Windus.

The two-fold interest of this book is indicated by the sub-title, *A. D. Lindsay and the Keele Experiment*. It is not only an account of a new university by one most intimately connected with its planning and working during the first years of its establishment, (W. B. Gallie was Professor of Philosophy at the University College of North Staffordshire at Keele), but it is also an account of the man whose life's mission found its fulfilment in this new educational experiment. It is not a systematic biography of A. D. Lindsay, though the book begins with him and ends with him, and his stamp is on every page. We see his personality, his career, his ideas, mainly as leading up to, and as reflected in, the unique institution which he founded, and of which he was the first Principal.

The author mentions two different incidents which led to the writing of his book. A year or so after Lindsay's death, one of his most loyal friends said of him, "He just missed being a great man." Unable at the time to do anything but mutter his semi-agreement, the author later thought of what he could have said in reply, and went on to say it in this book. He here regards Lindsay as one of those who are great "more because of the works they set in motion than because of the immediate impression they make on their contemporaries." But the book also springs from a request made to Professor Gallie by a girl who belonged to the earliest batch of students to join Keele, and who had been present on the opening day of the first term. She wanted him to write a book explaining to her and her contemporaries, as well as to future generations of students, what Lindsay had set out to do at Keele, mention-

ing in particular what he had said in his opening address, for she feared it was being forgotten, though it was of immense importance, and needed to be recorded.

The book as it stands, however, does not appear to be addressed to the students of Keele, but to the layman interested in education, not necessarily familiar with the set-up at Keele. It seems to me that such a reader would appreciate a few more facts regarding the syllabus, and in particular, the much-discussed Foundation Year Course. As it is he might do well, in the course of reading about the new university, to turn to its Prospectus and then with a clearer picture of the nature of the programme of studies at Keele, and the way they differ from the usual course of studies at a British, or for that matter, an Indian university, he can return to the book and read of the informing purpose underlying these studies and the reactions of the first teachers and students who participated in them.

The Prospectus of the University College of North Staffordshire for 1960-61 states the objective to be "a broad education based upon an understanding of the heritage of Western civilization, the development of modern society, and the nature, methods and influence of the experimental sciences." Though it is a University College and not a University, the college is allowed to grant its own degrees, but representatives from three sponsoring universities, Oxford, Manchester and Birmingham, serve on its Academic Council to ensure the maintenance of academic standards. In furtherance of the objective of the college all students in their first year attend the Foundation Year lectures in which all the Professors take part. Students also attend a weekly discussion group meeting, as well as tutorials in subjects of which one each must be from the three groups, the Humanities, the Social Sciences, and the Experimental Sciences. In his next three years the student specializes, but is required to take four subjects, normally two as Principal, and two as Subsidiary subjects, and at

least one of the four must be chosen from the Experimental Sciences group and at least one from the Humanities or Social Sciences.

At first sight the Foundation Year Course seems the most original contribution that Keele has to make. It includes three series of lectures; the Background and Heritage of modern Western Society; Western Society and the Industrial Age; and Creative man (as a Scientist and as an Artist and Thinker). It would appear that the courses undergo considerable revision from time to time; the three series of Foundation Year Lectures have certainly been re-framed since 1956-57 when this reviewer visited Keele. A few of the topics dealt with in each series in 1960-61 may be mentioned, although this may not give an entirely accurate picture of the series as a whole.

Series A. (62 lectures of which 8 are cited below).

The Solar System.

The Earth's Crust.

The Whole Geographical Environment.

Natural Selection.

Greek Art.

Plato's Moral Theory

Feudal Society.

Descartes and Systematic Doubt.

Series B. (50 lectures of which 8 are cited below).

The Agricultural and Industrial Revolutions.

The Rise of Russia and the U.S.A.

The Second World War and its aftermath.

Social Differentiation and Social Integration.

Educating the many and Educating the Few.

Democracy and Bureaucracy—The Role and Nature of the Political Party.

The Techniques of the Economist.

Town and Country Planning since 1943.

Series C. (100 lectures of which 8 are cited below).

Romanticism.

The Elements of Expression in Painting and Sculpture.

Alchemy to Chemistry.

Computers and Electronic Brains.

Diet and Nutrition.

The Modern Chemical Industry.

Scientific Method.

Language as a Tool.

The Foundation Year Course certainly lays the foundation of what Lindsay regarded as the substance of an adequate university training. The task of the university in his view was not primarily to produce specialists but (to quote Professor Gallie) "men and women with an informed sense of political responsibility.....(and) the capacity and desire to reflect sincerely and effectively upon what they are doing." As against the traditional Oxford ideal which Professor Gallie regards as the "training up" or the "stretching" of the intellectual muscles, and the Manchester ideal of training in research and contributing to the advancement of knowledge, Keele aims at helping to create a "Self-understanding Society."

Professor Gallie seeks to dispel the misunderstanding existing in the minds of many visitors to Keele that the Foundation Year Course, and perhaps the specially designed subsidiary courses, are the features in which Keele differs from other universities while the principal courses resemble the Joint Honours schools found elsewhere. Having myself been of this opinion, I was interested to read how the Principal Courses are in fact treated as the most important means of implementing the Keele ideal. Instances are given of a judicious combination of subjects each of which illuminates the other and the combined study of all of which leads to a deeper understanding of Western civilization and of the problems of modern society. Such instances are Philosophy, Politics and Economics, French and German, English Literature and Philosophy, and History

in combination with other subjects. It is more difficult to see how the study of the Experimental Sciences may contribute to the general aim of a better understanding of society, and in the early stages of the Keele experiment described in this book, the organisers were feeling their way towards an idea of the position that science should occupy in the curriculum. But one thing was clear, that even the non-specialist students taking subsidiary course in science had to be trained to work as a scientist works, in however restricted a field ; it was not enough for him to know what science was about or how it affected the modern world. On the other hand, the science specialist, in addition to being trained as a specialist, had to be made aware of these aspects and this was possible only through the study of a subject from the humanities or the social sciences.

At a time when Bombay University is considering the idea of General Education, the experience of Keele is well worth examining. The term 'general education' is not, as far as I remember, used once in the book, but a reading of it should make it obvious that the objectives of general education cannot be fulfilled by any tinkering with the syllabus such as the addition of an arts subject for science students and of a science subject for arts students. There would have to be a replanning of the curriculum as a whole, and if there are to be additions there must be restriction and curtailment as well. The syllabus in the principal subjects at Keele is restricted compared to that in other British universities.

An account such as this by an 'insider' gives one those intimate personal glimpses of the life of an institution which even a visit to the place does not always provide. We watch the first arrivals on the rain-soaked campus, trudging through the mud to the huts allotted to them, only to find bricklayers, carpenters, plumbers, all getting in each other's way. The students assemble to hear Lindsay on the opening day in 1950, and the somewhat bewildered

reactions of staff and students alike to the project are revealed to us. The original group of professors is not presented as a dedicated band of enthusiasts ; the frictions, the working at cross-purposes, the lack of any real belief in the whole project in some cases, are also presented to us ; this, if the truth were told, being probably the case in all new experiments. And the indomitable enthusiasm of the founder is also communicated, as he hurries to a student set together with his wife accross the windswept campus, between piles of drain-pipes and up-turned wheel barrows and rolls of wire clutching desperately at his hat, with his rain-coat pinned back by the wind. The students admired him without quite realizing what it was they admired. " They knew that he was a Lord and Labour : being Labour **made the Lord part all right for some, and the Lord part made the Labour all right with others.**" One wishes the author could have told us more about how later batches of students, students whom Lindsay never lived to know, since he died in 1951, reacted to the Keele project when ideas were clearer as to what it was all about.

The impression conveyed of Lindsay himself might perhaps have been clearer if discussion of his personality and ideas had not been diffused in different parts of the book. In the opening chapters we learn about his family background and his career, and how the ideas formed during a varied and useful career led to the establishment of the University College of North Staffordshire. The closing chapter gives us a more personal impression of Lindsay, formed from meetings and discussions which the writer had with him at Keele.

Besides being master of Balliol College, Oxford, for twenty-five years, Lindsay was also a trusted adviser of the Labour Party and the T.U.C. on educational matters, and a keen champion of Adult Education. As an Indian, one is interested to hear that he visited India as a member of a mixed East-West Commission, to study the working of

Indian Chirstian colleges, and formed a friendship with Mahatma Gandhi. His work as a Philosopher is assessed. For Lindsay the task of the philosopher is to question and explain which human pursuits are worth-while, and to articulate and define the standards by which we judge their worth-whileness. This 'ethicising' trend, as the author puts it, runs counter to the prevailing 'logicising' tendency in modern philosophy. Lindsay's views as a political philosopher find expression in *The Modern Democratic State, Vol. I*, (the second volume was never published). The essence of democracy, he argues is to be found in "Free associations," such as churches, universities, trade unions, where men bind themselves freely to serve a cause which is greater than themselves.

Professor Gallie thus clearly demonstrates how Lindsay's convictions about philosophy and about democracy led him to think of a university as a place where students learnt to question the purpose of their special subjects and to see them in relation to the life of society. Over the years he worked out a form of university education which might create in young men and women an informed judgement and self-awareness. The outcome was Keele.

PROF. SHIRIN KUDCHEDKAR.

Recent Trends in Education : Editor, Dr. T. K. N. Menon,
 Directorate of Extension Programmes for Secondary
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Brought out in 1961 to commemorate the Silver Jubilee of the Faculty of Education and Psychology of the Maharaja Sayajirao University of Baroda, where the Editor worked for about a quarter of a century, the volume is concerned, in the words of the editor, "essentially with improving the *quality* of education" and "maintaining standards"—a problem which is of particular urgency here in view of the phenomenal expansion in education which we are witnessing in post-war independent India. Numbers alone should not be the goal. Quality is most important, for on the type of citizens which our educational institutions turn out may very well depend the success of our experiment in democracy. The problem is not merely one of better methods of teaching. It is complex and one in which aims organization, evaluation, testing, teacher preparation, curriculum, methods and research are involved.

All these aspects, in their facets, are covered by the volume under review in a series of thirty-three articles, which, by their nature, fall almost naturally into the two parts into which the volume has been divided. Part I deals with the new trends in educational philosophy and educational organization ; Part II deals with modern developments in the teaching of the various school subjects, including General and Home Science (Economics), Technical and Commercial subjects and Agricultural Education. All the contributions are by authors eminent in their own fields of specialization, and, therefore, all are of outstanding merit ; and it would be difficult to single out any one article for

special commendation. Of the thirty-three contributors nine are from India, seven from the U.K. and seventeen from the U.S.A.

A glance at the Table of contents shows the wide area covered. Part I contains studies on the philosophy of education by J. S. Brubacher and E. P. Link ; on teacher education and international understanding by D. J. Johnson ; on evaluation and testing by B. S. Bloom, K. Vedanta Chary and Anna Dragositz ; on curriculum and psychology by Th.D. Rice and Chandos Reid Rice ; on educational psychology in teacher education by A. P. Coladarci and M. Varma ; on research in educational psychology by J. M. Stephens ; on student selection by T. N. Sequeira ; on basic education by M. Sykes ; on the education of nursery school teachers by R. C. Smart ; on the radio in secondary education by C. L. Kapur ; on educational associations and professional advancement of teachers by W. C. Carr and R. Gould.

It is outside the scope of this review to analyse the various articles, however briefly, but I may be permitted to make an exception in the case of a few of them. The papers on philosophy by Brubacher and Link are of special interest because they present two divergent philosophies of education. Brubacher emphasises the need for the pursuit of excellence as a matter of imperative importance in the context of modern education, particularly of American education, which, under the influence of the pragmatism of J. Dewey and W. James, instead of trying to make imperfect men perfect, seeks to make imperfect men more comfortable. To this he attributes the general academic apathy in higher education, since the great majority of undergraduates are planning for practical careers rather than pursuing excellence as an end in itself. Dr. Link, on the other hand, proposes a 'labour philosophy.' He shows that Dewey and Gandhiji were both concerned with finding a practical solution to the same question, "what system of education will

work best for my people": one found the solution in 'learning by doing,' and the other in 'learning by living.' He concludes by showing that "the labour philosophy speaks to the needs of the East and the West in a variety of ways."

Of interest also are the views of Dr. Bloom and Vedanta Chary on Evaluation. Dr. Bloom is convinced that "if we could get away from education as an institutionalised process to education as a highly personal one, we might be able to understand better the power of a process in which objectives, learning experiences and evaluation are seen in their proper relationship." Many will appreciate the observation of Mr. Chary that "what matters more in the evaluation of the academic type of abilities is not the use of a particular type of questions, like the essay or the new objective type, but the framing of questions with a view to testing the desirable abilities with reference to educational objectives."

In the matter of testing Miss Dragositz points out the "two most common misrepresentations of test results: placing too much reliance on them and declaring them utterly useless. Their value lies in the middle. Tests provide samples of the students' abilities or behaviour, which, when combined with other information about him will add to our knowledge of his capacities and achievement."

In their studies on Psychology in Teacher education, both Dr. Coladarci and Dr. Varma are critical of the educational psychology courses offered to teachers in Training Colleges, as being largely theoretical in their content and divorced from school situations. Both make a plea for the redefinition of the content of educational psychology and for the revision of the objectives and current methodology of psychology teaching, so as to bring in closer co-ordination with life experience and class-room situations.

Writing on Research in Educational Psychology Prof. Stephens reviews some important recent lines of research

in the field of educational psychology. He refers to studies that show how the basic 'mechanisms of schooling and learning' are surprisingly unresponsive and negative to methods or organizational or class-room factors, and that "different teaching procedures produce little or no difference in the amount of knowledge gained by the students." He cites the following findings: at the elementary school level and at the college level, alike, pupils in large classes continue to learn as much as comparable students in smaller classes (Spitzer, 1954; Rohrer 1957); when a teacher is responsible for two classes or forms within the same room, there is no academic or social loss to the pupils involved (Adams, 1953); at the grammar-school level there appears to be no clear-cut advantage for the large well-equipped school over its smaller, more modest, counterpart, (Anderson, Page and Smith, 1958); both younger and older pupils studying through correspondence courses do as well at examinations as comparable pupils having at their disposal all the advantages of class-room instructions (Childs, 1954, Dysinger and Bridgman, 1957, Parsons, 1957); along with the established equivalence of the lecture and the discussion methods, there has been a recent challenge to the superiority of the democratic approach over the more authoritarian climate (Anderson, 1959); as far as the typical examination can reveal college students taught by television learn no more and no less than students taught by the traditional methods (Seigel and Macomber, 1957).

Part II deals with modern developments in the teaching of the various school subjects. In the field of language teaching we are given the experiments of Dr. K. M. West, the studies on the teaching of English as a second language by L. A. Hill, on the teaching of modern European languages by Theodore Anderson, and on the teaching of Modern Indian Languages by Dr. D. M. Desai. Dr. West and Prof. Hill make a strong plea for the "bookless approach" or the "aural—oral" method. Dr. Desai advocates a re-

orientation in the teaching of Modern Indian Languages in schools with a view to developing the language skills that are essential to active citizenship and to living a richer and fuller individual life.

Next we have the studies of Mr. J. R. Reeve and Mr. J. C. Parrack on the teaching of History and Geography respectively. In the opinion of Mr. Reeve, history is the 'key' subject in the curriculum because in an era of scientific and technological progress, it is history that "can counteract the worship of science and technological invention through the emphasis it can lay on the cultural, spiritual and humanistic values of life." Equally sobering is the recommendation of Mr. Parrack that "Although understanding of the problems of our fellowmen does not necessarily generate sympathy for them, true sympathy is impossible without understanding. To help building this up is one of the main tasks of Geography." In the matter of Social Studies the views of Dr. Jack Allen may prove somewhat disconcerting to those engaged in the integration of the Social Studies Syllabus. According to him "the term "Social Studies" does not refer to a particular form of a curriculum organization ; it simply means 'the use of Social Science materials for teaching purposes. Thus in the secondary school, social studies may refer to a course in American history or world geography or modern problems, or some other offering of equally dissimilar title."

Then follow two papers on the teaching of Mathematics in secondary schools one by Dr. C. H. Brown and the other by Prof. K. R. Gunjekar. Dr. Brown discusses the problem with reference to schools in the U.S.A. and Prof. Gunjekar with reference to schools in India. Both writers are of the opinion that the mathematics content should be revised in view of the 'explosive development of mathematical theory' (Dr. Brown) or 'to give it a bias more in the direction of the present scientific and technological trends, and

less of the requirements of trade and commerce, as was the case when the syllabus was originally framed.' (Gunjekar)

In his paper on the Teaching of General Science Mr. R. H. Dave examines critically the present practice and makes a plea for the framing of a functional syllabus which would facilitate an integrated approach and would create a scientific attitude in the pupils.

The contention expressed by Prof. H. R. Mills and Dr. I. R. Wells in the two papers that follow that "technical subjects in secondary schools must be regarded as 'a valuable part of general education and that "the function of the secondary school is not to produce finished craftsmen or even to give vocational training" will find wide acceptance among educators today and it is in agreement with the views of the Secondary Commission of 1953.

In the paper on the Teaching of Home Science, Dr. (Mrs.) R. P. Devadas deplores the lack of facilities in this country for the teaching of the subject. The subject of Home Economics in Teacher Preparation is discussed in the two papers that follow by Miss M. Horton and Miss T. E. Kauffman with reference to conditions in the U.S.A. where the subject enjoys a higher status.

The last contribution is a paper on Agricultural Education in secondary schools. Mr. M. K. Luther deals mostly with the objectives of agricultural education "as they guide and affect the training of boys in multipurpose schools."

A most welcome feature in the volume is the Editor's note heading each article, where the Editor introduces the writer and pin-points the salient points of the article.

Several writers have appended to their article a bibliography of recent works relating to the subject of their study. A bibliography to each paper would have added to their merit.

Of the thirty-three contributors a little more than fifty per cent are drawn from the U.S.A. and seventy-two per cent from the U.S.A. and U.K. taken together. In a work that reviews Recent Trends in Education, the student of education is likely to miss contributions from other parts of the world, particularly from French and German speaking countries which are progressive in education. The trouble of having to translate them would have been repaid by the feeling of having a completer and almost exhaustive review of educational trends to-day.

The book will prove most valuable to educators and teachers as a ready reference book. Prof. T. K. N. Menon deserves to be congratulated on the idea of bringing out the volume to commemorate the Silver Jubilee of the Faculty of Education and Psychology of the University of Baroda, and on the still finer idea of dedicating the volume to the hundreds and hundreds of students in whose formation as teachers he worked for a quarter of a century.

A. S.

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